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A PRIMER FOR PLANNERS.

BY- REED, BOB H.

AMERICAN ASSN. OF JUNIOR COLLEGES, WASHINGTON,D.C.

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A SERIES OF 10 ARTICLES HAS BEEN COMPILED FROM ISSUES OF THE "JUNIOR COLLEGE JOURNAL" TO SERVE AS A BASIC GUIDE TO PERSONNEL INVOLVED IN JUNIOR COLLEGE CAMPUS PLANNING. EMPHASIS IS PLACED ON EARLY INVOLVEMENT OF THE ARCHITECT IN THE PLANNING PROCESS, CLOSE WORKING RELATIONSHIPS AMONG THE MEMBERS OF THE EDUCATIONAL AND DESIGN TEAMS, THE IMPORTANCE OF CREATIVITY, PROGRAMING, ORGANIZING FOR PLANNING, SELECTION OF AN ARCHITECT, EFFECTIVE SITE SELECTION, MASTER PLANNING PROCESSES, AND THE RELATIONSHIP BETWEEN DESIGN AND LEARNING. THIS DOCUMENT IS ALSO AVAILABLE FOR $1.50 FROM THE AMERICAN ASSOCIATION OF JUNIOR COLLEGES, 1315 SIXTEENTH STREET, N.W., WASHINGTON, D.C. 20036. (WO)

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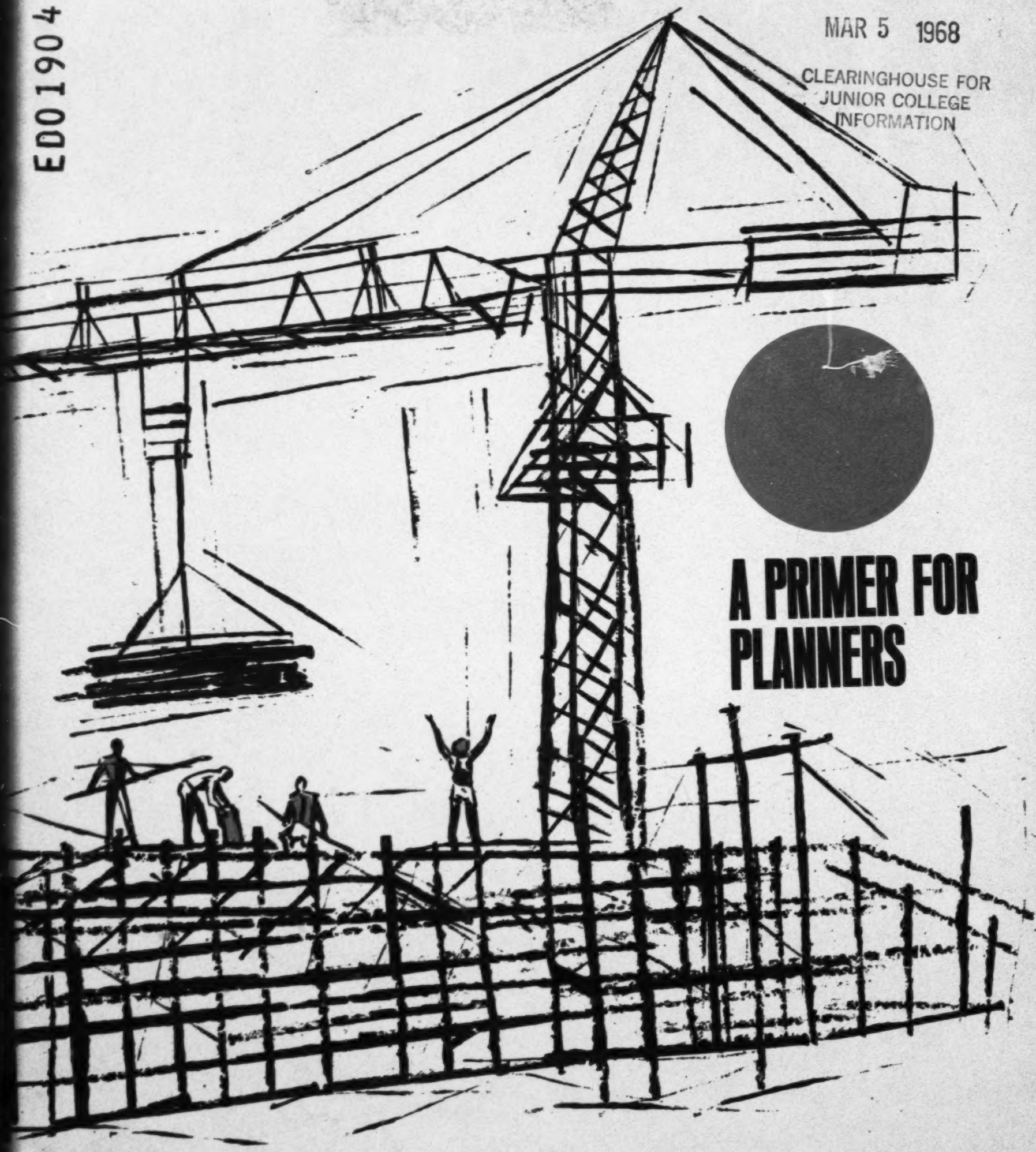

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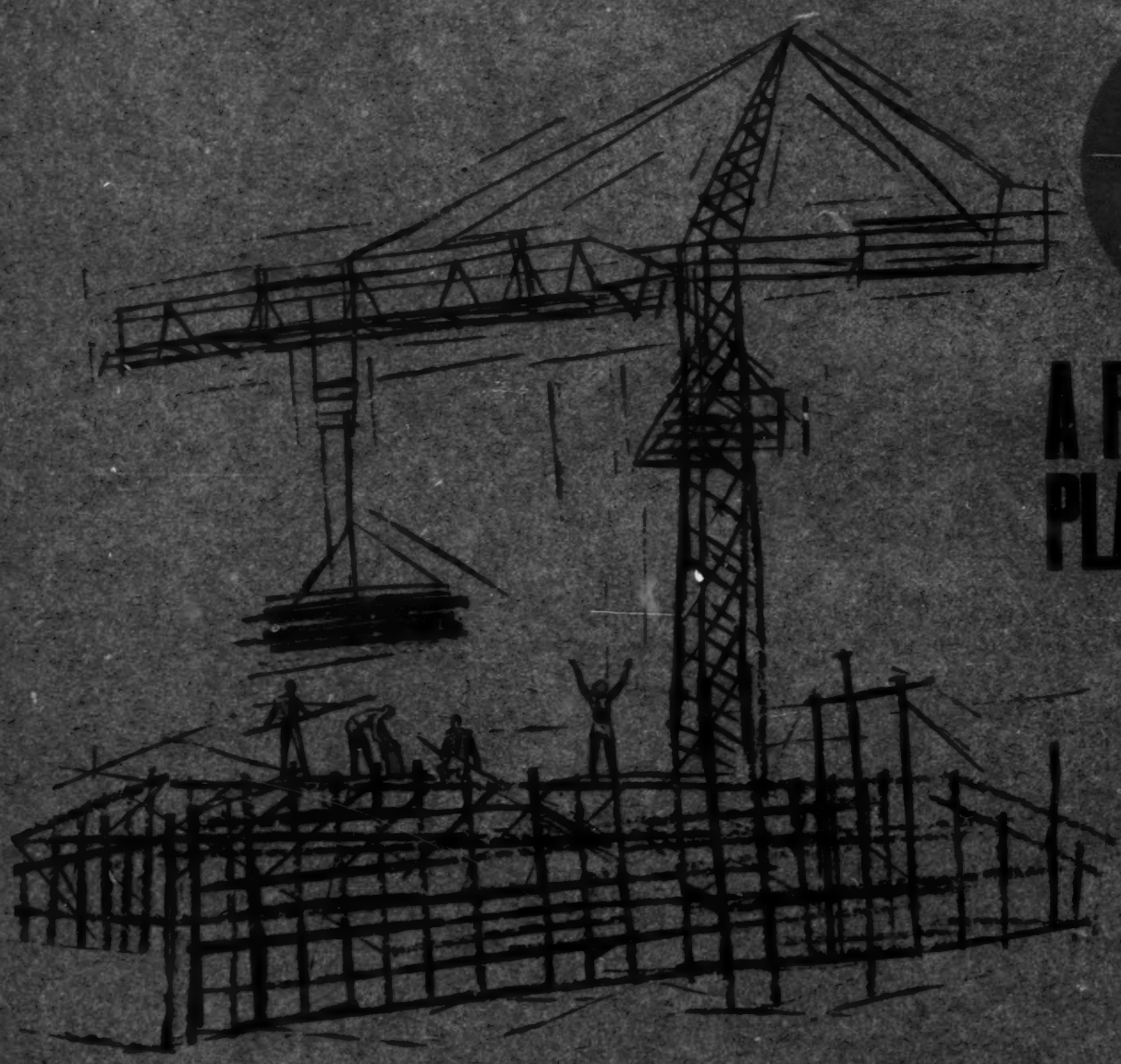

A PRIMER FOR PLANNERS

ARTICLES ON PLANNING NEW FACILITIES REPRINTED FROM THE *JUNIOR COLLEGE JOURNAL*

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FOREWORD

In May 1966 the Facilities Information Service was begun at the American Association of Junior Colleges through a grant from Educational Facilities Laboratories. The goal was to provide, by various means, information and guidance to the junior colleges regarding the planning of new facilities appropriate to their unique needs.

One of the basic needs recognized in the early stages of the project was for information of a general nature regarding the essential processes in planning new facilities. This need is important to the new colleges which are emerging at a rate equal to one a week. Most of these colleges have never been through the "planning mill."

In an attempt to fulfill this need, a series of "primer" articles regarding the planning processes was initiated and published in the *Junior College Journal.*

This publication is a compilation of the articles. We hope it will serve as a useful guide to planning, particularly to the emerging institutions as they take up the dramatic challenge of creating new campuses.

The American Association of Junior Colleges wishes to express its sincere appreciation to the following persons for their valuable contributions to this series of articles:

Joe B. Rushing, president, Tarrant County Junior College District, Fort Worth, Texas

Bill J. Priest, president, Dallas County Junior College District, Dallas, Texas

H. Deon Holt, director of planning and research, Dallas County Junior College District, Dallas, Texas

C. M. Duke Wilson, Okaloosa-Walton Junior College, Valparaiso, Florida

Max Tadlock, director, educational research and planning, Management and Economics Research, Inc., Palo Alto, California

George W. Ebey, vice-president, Management and Economics Research, Inc., Palo Alto, California

Enslie O. Oglesby, Jr., architect, El Centro College, Dallas, Texas

Louis E. Finlay, Caudill Rowlett Scott, Houston, Texas

Robert E. Lahti, president, William Rainey Harper College, Palatine, Illinois

F. Philip Brotherton, Perkins and Will Partnership, Chicago, Illinois

Charles William Brubaker, Perkins and Will Partnership, Chicago, Illinois

William M. Pena, Caudill Rowlett Scott, Houston, Texas

Leroy V. Good, president, Monroe Community College, Rochester, New York

Clifford G. Erickson, president, Rock Valley College, Rockford, Illinois

Ernest J. Kump, Ernest J. Kump Associates

Bob H. Reed, Director of Facilities Information Service, American Association of Junior Colleges

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THE ARCHITECT: PLANNING PARTNER

Educators Come Closer to the Perfect Teaching Facility
As They Succeed in Involving the Architect in Early Planning

By Joe B. Rushing

The perfect educational facility has not been built.

Architectural errors are the universal complaint of educators. Even in the best designed junior college, planning mistakes (both imagined and real!) are readily pointed out by the faculty.

The architect usually gets the credit for poor planning. Seldom, however, is he solely to blame. Too often he is brought into the planning process too late. Many of the problems of facility planning could be eliminated by earlier involvement of the architect.

Architects are not experts in education. Likewise most educators, while competent in their fields, are uninformed in matters of design, engineering, and construction. But together they can make an effective team in educational facilities planning.

In too many cases, the planning is done and the educational specifications written before the architect is commissioned. He is then given the specifications and directed to design the building within a limited budget. It is little wonder that the results are not always satisfactory if the professional educator and the professional architect have not worked closely together throughout the entire planning stage.

The Tarrant County Junior College is a new institution now under construction. Circumstances dictated that the architects be brought into the picture at the very beginning. Faced with the task of opening the first unit of a three-college system in September, 1967, the board of trustees moved rapidly. Within thirty days of its election on July 31, 1965, the board had selected a president for the district. Within six weeks after the president reported for duty, a statement of philosophy had been written, basic principles of multiple campus planning had been established, architects had been commissioned, and three sites totaling 496 acres had been selected and acquired. At the end of twelve months following the formation of the district, educational program and construction are progressing according to plans.

Only by close working relationships between educators and architects has the college been able to stay on its schedule in the educational planning as well as facilities planning. Conditions which forced early involvement of the architect have worked in favor of the college.

An understanding of junior college philosophy is essential for an architect. If he has never designed a junior college before, every effort must be made to give him a background of this dynamic movement in American education. He must have a clear understanding of the philosophy, aims, and purposes of the particular institution which he serves.

Involve in What?

In the case of Tarrant County Junior College, the architect was given a copy of "Overview" at the time he was commissioned. This mimeographed publication included the general philosophy of public community junior colleges, the specific objectives of the Tarrant County Junior College, and some accepted principles of multiple-campus operation. "Overview" became a basic planning document.

Written statements are not enough. The purpose and function of the college should be discussed at length with the administrators, and the board. When time permits, such conversations may be profitable before selecting an architect.

A second area of involvement of the architect should be in certain administrative decisions. His

Architects Morris B. Parker (left) and M. E. Croston, Jr., discuss a profile model of the first unit of the multiple campus Tarrant County Junior College District in Texas with the author, Joe B. Rushing, college president.

task is not to make or even influence such decisions, but his work as architect will be made easier and more effective if he is well informed on the operation of the college. He must know the organizational structure and lines of authority and responsibility. He needs to know something of admissions policies and records systems. Decisions on student housing, food service, class scheduling, and the many others which must be made in the operation of a modern college are all of interest to a designing architect. Most important however, is the instructional program. What teaching methods will be employed? What will class sizes be? What about ETV? Team teaching? Computer assisted instruction? Independent study?

At Tarrant County Junior College, the president made a number of early administrative decisions to give direction to the new staff in development of the college. A copy of these decisions, called "Guidelines," was placed in the hands of the architect before he began his work. It too, became a basic planning document. By studying these decisions and some fifty other administrative decisions which the staff would follow during the early months of operation the architect knew that the college planned to have no students residing on the campus now or in the future; and that it would have only freshman students the first year; that the initial library holdings would not exceed 10,000 volumes. These decisions played an important role in planning the facilities to accommodate 2,500 full-time students in September, 1967.

A third area of involvement, and an important one, is that of site selection. When a junior college must seek land on which to build a campus, the architect can render a valuable service. He is in the best position to gather data on area development plans, building codes, long-range traffic planning, and other information about a community which can result in savings to a college and in a more effective educational institution. The architect can effectively coordinate the work of those who make soil tests, drainage studies, surveys, and many other things to be considered in selecting a junior college campus.

Educational specifications are often written before an architect is commissioned. This could be a mistake. He can play an important role here in this task if he has a good knowledge of the institution's philosophy. If he participates at this point, he can interpret the educational requirements more effectively in the preliminary plans and the working drawings. Time and expense can be saved by considering architectural, engineering, and legal requirements before final specifications are approved.

The construction budget usually has limiting features. In some cases there is a fixed amount of money and nothing the administrator, the board, or the architect can do can change it. But even here, if the architect is consulted early, he can assist in preparing a defensible budget for the project. Because of his experience, he is informed about general construction costs, special local problems relating to labor and materials, and many other factors which affect the construction budget. While he cannot effect the total amount of money, his early work may result in greater value received for the funds available.

The above aspects of planning are important ones for the architect. When he can be involved in these, better junior college facilities will be the result. But there are other ways in which an architect and an administrator can share experiences to the advantage of both.

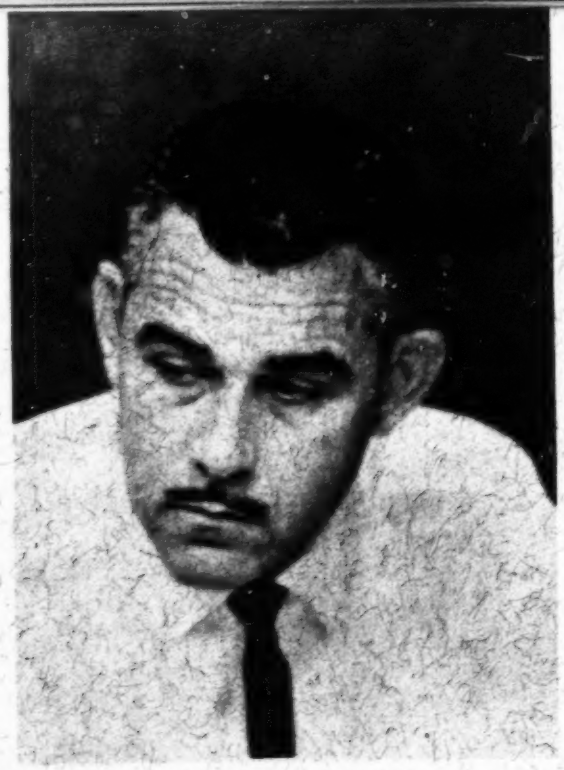
Take Him with You

Conferences relating to junior college planning and construction are held each year throughout the country. Whenever possible, administrator and architect should attend together. Participating in the same discussion groups, hearing the same lectures, and seeing the same demonstrations can give both a better insight into their planning problems. Greater emphasis should be given to conferences of this type involving college administrators, architects, and planners.

Take him to conferences on facilities legislation. With increasing federal impact on college construction, the architect must keep up with these developments. The use of federal funds is of vital interest from the earliest planning stages to the final acceptance of the building. Bidding procedures, wage scales, reports, and many other items directly affect him. Because of this direct involvement, architects should be given every opportunity to keep fully informed.

One of the most valuable experiences to be shared by the administrator and the planner is that of visiting other junior colleges. A good investment, especially for those planning their first junior college, is travel to other institutions where good planning is evident. There is great value in the educational planner and facilities planner seeing these together. Include engineers and consultants in such visits. No one person can be completely competent in all areas of college facilities planning and construction. Take a representative group, take plenty of time, and it will be worth many times the cost.

No, the perfect teaching facility has not been built. Nor will it ever be. But when junior college educational planners make partners of their architects early in the process, they will more nearly approach that goal.



By Bob H. Reed

People, Processes, and Time = Facilities

A "Primer" on Planning New Facilities for Junior Colleges

Planning campus facilities for a new or expanding community college is not a routine task nor does it involve an exclusive club to do the work.

A really successful campus is the result of many long hours of diligent effort on the part of numerous groups and individuals representing an almost limitless range of necessary talents.

The architect is generally credited with the creation of campus facilities and this is as it should be, for the architect usually serves as the leader in getting the job done. The wise architect, however, seeks and welcomes the help and advice of others. The college client should also be aware of this need.

The architect not only needs the unfailing cooperation of his client, the administrators and the educators, but also the help of numerous members of the other allied design professions. And, of course, the college client needs and deserves the dedicated cooperation of all these professionals who will constitute his design team.

People

All the people involved in the creation of community college facilities, including educators and the various design professionals alike, constitute the total planning team. Individual members of the total team will need to contribute their particular talents and concentrate their efforts at different points on the time scale but responsibilities will tend to overlap and each must be willing and able to cooperate with all other members of the team.

The total team might be looked upon as composed of two principal groups:

1. *The educational team:* primarily responsible for establishing the goals and objectives of the college and determining its needs for facilities.

2. *The design team:* primarily responsible for creating facilities particularly suited to meet these established needs in order to help attain the expressed goals and objectives.

These two groups may consist of, but not necessarily be limited to, the following:

1. *Educational Team*

a. Board of trustees or other governing body

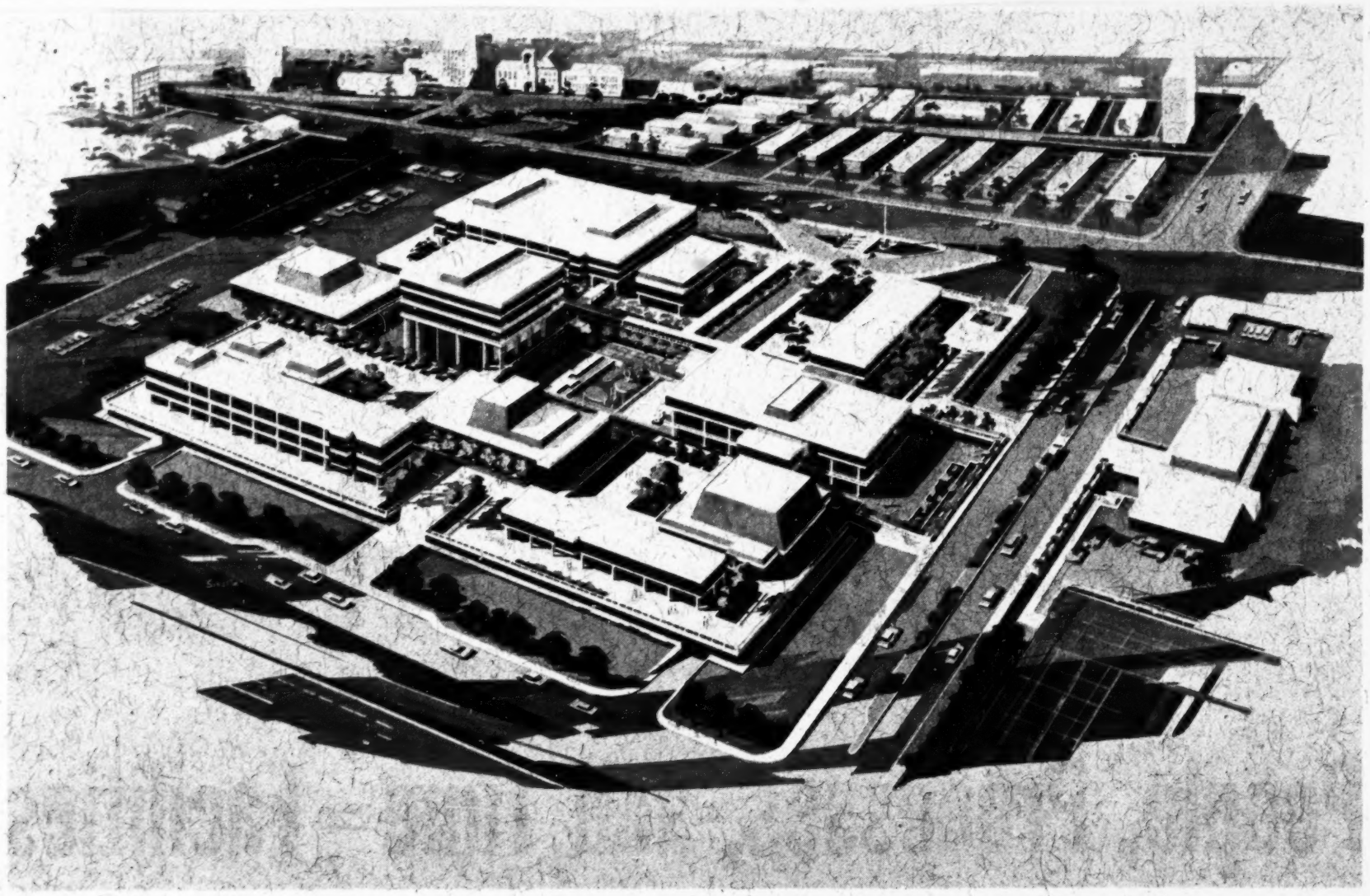
b. Chief administrator: president, dean, director

c. One or more administrative assistants to whom the chief administrator may delegate the responsibility of coordinating the planning of facilities

d. Department heads

e. Faculty committees

f. Educational consultants: specialists in the determination of community needs and writing of educational specifications.



Metropolitan Campus of Cuyahoga Community College, Cleveland, Ohio, which was one of three junior college facilities honored in the 1966 Design Award Program conducted by the Bureau of Higher Education, U.S. Office of Education.

2. *Design Team*

a. Campus planners: specialists in long-range comprehensive planning of the college campus dealing with regional and community relationships, traffic and transportation, land use, zoning, climate, topography, drainage, circulation and parking, and other physical, economic, and functional factors.

b. Architects: usually concentrate on programing and design of specific spaces and buildings. Conscientious architects, however, relate themselves closely to the long-range comprehensive plans and are anxious to participate in, or at least be totally aware of, long-range plans from the very beginning.

c. Engineers: structural, mechanical, and electrical, as we all know, lend necessary talents to the design of buildings, but again, as members of the team, may make valuable contributions from the beginning of planning long before individual buildings are conceived.

d. Landscape architects: specializing in land use, climate, vegetation, topography, drainage, and the total physical and emotional environment should be a part of any campus planning team.

e. Interior designers: usually architects by training but specializing in this field are necessary members of the team, although the bulk of their work may come later on the time scale.

f. Special consultants: various kinds may be needed at certain times throughout a campus developmental project. The need for such consultants should be anticipated and they should be made a part of the team as early as possible so as not to be working in isolation of major concepts.

Processes

The process of creating community college facilities consists, in reality, of a continuous string of closely related and inseparable events; some, however, being prerequisite to others. For discussion purposes, it is desirable to break this long process of events into phases. In architectural circles, the major phases are often defined as: site selection, campus planning, and architecture.

1. *Site selection* is often broken down into subphases such as: surveys, evaluation, and final selection.

2. *Campus planning* is often broken down into subphases such as: programing, design, and reporting.

3. *Architecture* is likewise usually broken down into subphases such as: programing, design, and construction.

These subphases may be further divided into

numerous other categories of events, which will be enumerated later.

Time

The time required to program, design, and construct community college facilities quite literally depends, to use the old military phrase, on the situation and the terrain. A few, but not all, of the determining factors may be:

1. *Size and complexity* of the project: A building or two can be added to an existing campus in much less time than it takes to build a completely new campus. A very small new campus can usually be built faster than a very large one.
2. *Urgency:* Time is usually of the essence but not necessarily always. One college recently announced an opening date of fall, 1971. Blessed are they who do not have to hurry. But most of us do. Another college opened its doors to 700 students (F.T.E.) in a remodeled factory building 135 days after an architect was employed.
3. *Climate:* Severe climatic conditions may add to the time necessary for construction.
4. *Site:* Difficult land-use and site development problems may add to the time necessary to design and construct the facilities to go on it, although the final results may be rewarding in the end.
5. *Financing:* Obviously, difficulties in financing which may occur during the project may have a retarding effect.
6. *Team:* If the numerous groups and individuals on "the team" are cooperative, sincere, and recognize themselves as a part of the whole, the project is apt to move faster than if dissension is constantly erupting. This is a most important factor.

The accompanying chart is an attempt to consolidate this brief discussion of people, processes, and time into a simple graphic form to serve as a general guide for action to community college boards and administrators faced with the problem of building new facilities to house their programs. The key to accomplishing this is to employ the necessary members of the team at the proper time and to coordinate their activities and responsibilities. It is hoped that the following analysis of this chart will, in some measure, be of assistance to this end.

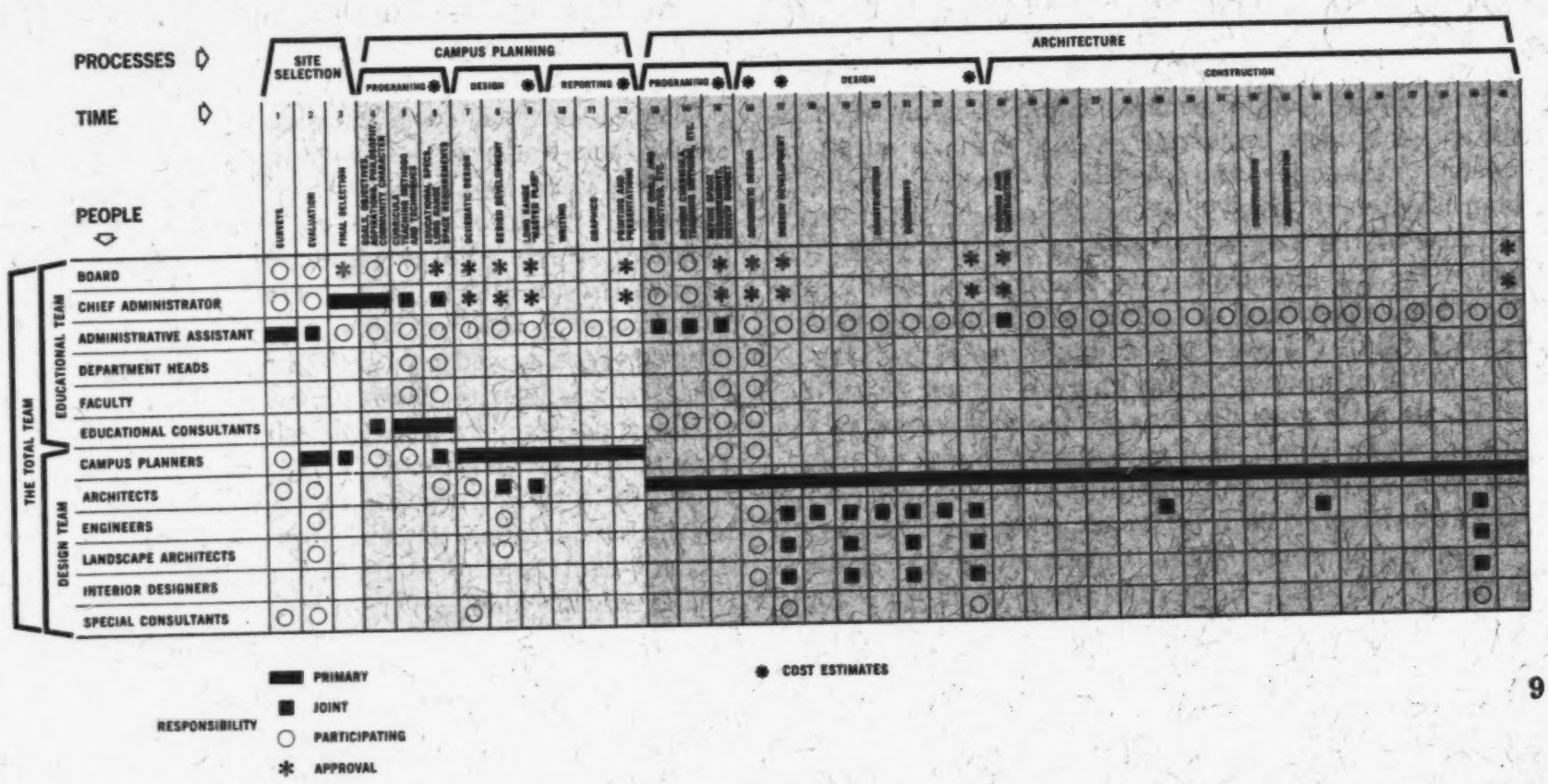
The Chart

The chart is arranged with time and processes horizontally and people vertically. The process phases and subphases as previously outlined are further broken down into smaller categories of events on the horizontal dimension. The symbols with which the chart is partially filled, represent a suggestion of the type of responsibility usually expected of various members of the team during the various phases of the work.

Time: As previously discussed, there are too many factors of "situation and terrain" to set an accurate time schedule for building facilities. Accurate schedules can be established only after a considerable amount of consultation and preplanning with members of the team employed to do the work. This points to the implication that the necessary members of the team should be employed as soon as possible.

The time scale on the chart is in terms of months, and is intended to be only an approximation of the time required for an average project involving a totally new campus. It should serve, however, to illustrate the point that many months may be involved and that having a good team on the job at an early date is essential in the use of time.

Processes: The chronological order of events on



the chart is also an approximation to some degree of an average project since, for many reasons, it may not, and sometimes should not, work as shown. For example, something can be said in favor of delaying site selection until campus planning programing is finished but this is often not practical because site selection is in itself a time-consuming process and may further delay the project.

Time can be saved by doing site selection and programing concurrently, however, if enough people are employed to do the work.

Site selection: For the new community college, the single most important event in planning for facilities is the selection of the site and it should not be treated lightly. Once committed, a badly located site, or one of insufficient size, can, in the long run, do great violence to the college program and negate its goals and objectives to a great extent.

Beware of the free site. Requirements should come first! The acceptance of a gift for purposes of short-range expediency at the expense of long-range goals is an easy trap in which to get caught, especially since most new colleges may be hard put for funds at this stage of their development.

In this discussion of facilities, it is assumed that, in the process of establishing the college, community surveys, including population distribution and student enrollment projections, will have been made. These factors, of course, strongly influence the general location of a campus site. Beyond this point, it is often advisable to seek the help of certain members of the design team in making a final selection. The campus planners, architects, engineers, and landscape architects represent a valuable pool of knowledge and experience which can be drawn upon in evaluating sites and helping to make the right choice. Special consultants from real estate may also be needed at this point.

Campus Planning

Long-range comprehensive campus planning is the second most important step for a community college to take after the selection of the site. Such a plan is often referred to as the "master plan." The purpose of the long-range plan is to make the best use of the site and to plan for the most efficient and functional placement of the various facilities necessary to fulfill the college's ultimate needs in carrying out its programs. If the campus cannot be built all at one time, then the long-range plan serves as a pattern upon which to plan various phases of construction and gives some assurance that the phases will fit harmoniously into the ultimate development.

Campus planning may not take as long as is indicated on the chart, depending upon what uses the college may have for the outcome. The chart allows for a reporting period, including writing and printing. A printed report is sometimes needed for promotion purposes related to financing or other matters. If a printed report is not needed, considerable time can be saved. Verbal reports, supplemented with drawings, slides, models, and other visual aids may be provided quite easily for other purposes.

The importance of documenting the rationale behind the campus plan, however, should not be overlooked. Whether in the form of a formal printed report or otherwise, the background data, assumptions, conclusion, and explanations of the concepts should be a matter of record to facilitate future evaluation of the plan.

Importance of Programing

The most important prerequisite to good design either in campus planning or architecture is good programing. Programing is problem seeking while design is problem solving. The end product of programing is the statement of problems which need to be solved.

Haste makes waste if the campus planning and design phases of a project are launched without a firm, precisely stated program. This points, once again, to the desirability of having the team on the scene as early as possible. Participation in and a thorough knowledge of the programing is essential to the team's understanding of the problems which need to be solved.

Architects and campus planners see the program in three parts: site, educational specifications, and budget.

These are the forces which shape the facilities. The site obviously presents physical planning implications. The educational specifications, in addition to expressing goals and philosophy, culminate in space requirements and the functional relationships or affinities of these spaces. And, of course, site utilization and space requirements must be balanced against the budget.

The educational specifications must be based on sound facts and creative educational concepts. The architect must look toward this information as the basis for creative questioning regarding his programing efforts. Space requirements alone do not inspire the architect. If there has been no educational concept clearly stated, the architect may find himself seeking purely architectural concepts. or, what is worse, the development of pseudo-educational concepts. At this point in programing, the architects and educators should work especially closely as a total team to seek truly balanced architectural-educational concepts which will make a significant contribution to the institutional goals.

The campus planner's principal objective is to see the "big picture" from a "high altitude," without

getting smothered in details. Exact room arrangements and broom closets can come later. His work is based on the general coordination of space arrangements, traffic circulation and parking, climate, topography, drainage, community relationships, and other broad stroke factors. He is looking for long-range plan concepts which will utilize the site and climate to their best advantage, meet the educational specifications, and fit the community.

It is at this point that the campus planners should work with special consultants, if available, from regional, county, or city planning offices, as well as others from utility companies serving the community. Valuable information can often be acquired in this manner and the spirit of cooperation may be extended to all concerned.

Since the long-range plan will ultimately involve general arrangements of buildings, the architects and engineers should also be involved in the planning process as indicated on the chart, in order to at least make preliminary studies of space modules, general arrangement of spaces, and structural types, even though they will also avoid specific room arrangements and broom closets at this point.

The end product of campus planning, then, is a "big picture" with sound concepts upon which an ultimate development can be built and, if necessary, in stages over a long period of time.

Architecture

The final and most time-consuming phase of facilities is designing and constructing the buildings, and this is the point at which the work becomes meticulous. All phases of programing must be reviewed, final decisions must be made, space requirements must be refined and spaces must be enumerated. Again, the importance of a thorough job of programing cannot be overemphasized. Not until all this has been done and the total space program has been balanced against the budget can the architect begin his design process with any degree of confidence and control.

Once this has been accomplished, the conscientious architect will take great pleasure in "working his fingers to the bone" to satisfy his clients' needs, for it is from the design phase that the creative architect derives his greatest satisfaction.

Schematic design: This is the first phase of the architect's design work. This usually consists of a relatively brief period but involves a highly concentrated effort to seek solutions and arrive at concepts. The client and other members of the team are closely involved with the designers during this phase and there is usually a constant process of evaluating, accepting and rejecting, reevaluating, approving and disapproving, and, in general, probing for good schemes. The product is likely to be reams of floor plans, building sections, rough sketches, perhaps a study model or two . . . but all done to seek solutions to satisfy the program.

Out of all this will hopefully come a successful scheme which can be sanctioned for further development.

Design development: Once a concept or scheme has been approved, the architect is in the position to begin the process of refinement. This process is often referred to as design development. This consists of a review and reconfirmation of all aspects of schematic design and the development of deliberate and accurate plans, this time including broom closets. The final results should be a complete and orderly set of preliminary plans including plot plans, floor plans, building elevations, building sections, outline structural and mechanical plans, typical details, sketches, and possibly a revised study model. Outline specifications are usually prepared at this time, also.

During this phase of the work, as shown on the chart, the entire design team works closely together almost constantly. It is also during this phase that other special consultants, such as acoustical or special equipment experts, may be called in. These same consultants will usually follow through the remainder of the project at appropriate intervals.

Approval of design development is one of the most critical responsibilities of the client since construction documents are based largely on the design development plans and outline specifications. As in all phases of the work, but especially in design development, the client should exercise his right of constructive criticism and suggest changes which he feels are in order. This is the point at which all decisions should be made as firm and final as possible.

Construction documents: Once the architect is involved in construction documents, he should be allowed to proceed uninterrupted as nearly as possible. This is the most meticulous phase of his work and requires the utmost coordination of all the talent on his team. Any changes which are injected into this phase of the work can set off chain reactions of troubles which can cost the project valuable time.

Construction

If the architect has done his job well, and if the client's demands have not exceeded his pocketbook by too great a margin, the bidding and contracting process should be a rewarding experience, cause for a celebration may be in order, and groundbreaking may be just around the corner.

A myriad of factors, however, makes the construction market quite unpredictable at times and in spite of the architect's knowledge and experience he has

no way of guaranteeing his estimates. For these reasons, bids may sometimes exceed the budget.

It is often common practice to include alternates in the construction documents to provide a cushion for such a possibility. If the alternates are successful, and have provided enough contingency, the problem may be overcome easily. If the alternates do not quite overcome the difference in bid and budget but the remaining difference is not too great, then the problem may yet be solved through direct negotiation.

If, however, the difference is too great to negotiate, the construction documents may have to be revised and bids may have to be made again. This situation, of course, will also cost the project valuable time.

Cost Estimates

The wise architect will be doing cost estimating almost constantly. He should be prepared to furnish the client estimates at the conclusion of various phases of his work as indicated on the chart. Such estimates must begin during programing and continue throughout the project but it should be realized that the estimates will become progressively more reliable as the work moves through subsequent phases.

It is absolutely essential that the client and the architect cooperate to the fullest extent in order to have assurance that cost and budget are well balanced before putting construction documents out for bids. It is better to make some realistic sacrifices in advance than to face a dilemma created by wishful thinking.

Once construction has started, the contractor should be allowed to proceed uninterrupted as nearly as possible. Changes injected during construction are apt to be costly in dollars as well as time.

Although it is customary for the architect to supervise the contractor's work closely, the contractor should be considered a part of the team and his knowledge, experience, and judgment should be respected. A conscientious contractor will be as interested as anyone in producing a quality product, for upon this quality also rests his reputation.

Summary

The broad goal in developing new college facilities should be the assurance that these facilities are tailored to the particular institution for which the planning is being done.

This goal can be reached only through a high degree of collaboration between the educators, planners, architects, and other members of the *total team.*

A thorough job of programing must precede the planning and design phases of the project.

This is a big job requiring much time and many talents. The team should be formed at an early date. It can never be too early.

Everything which we do as planners should help to stimulate creative thought both from the educators and the design professions, establish a clear line of communication between the two groups, maintain an inquisitive attitude, and take nothing for granted.

The community college is a unique and dynamic creation of man's imagination. Let us see that this imagination extends into its facilities.

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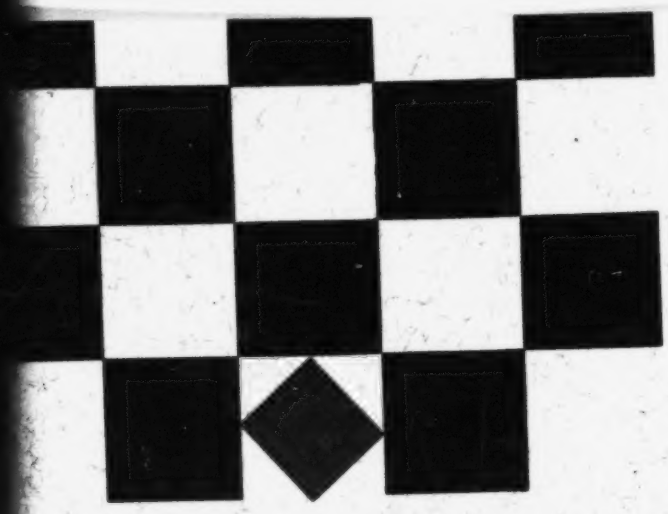


How To Organize for Facilities Planning

Junior College Planners Must Know About the Purpose of the Institution And As Much as Possible About Facilities; But, Also Important, They Must Be Creative

By Bill J. Priest and H. Deon Holt

Wanted: 100 junior college planning specialists.

Desirable qualifications: Successful experience as a junior college instructor, division chairman, curriculum director, dean of instruction, dean of student personnel services, business manager, head librarian, data processing specialist, college nurse, food service director, bookstore manager, maintenance supervisor, and head custodian. Working knowledge of fields of real estate, urban planning, architecture, landscape architecture, engineering, interior decoration, and graphics design.

Impossible? Obviously!

The alternative is to build a planning staff with as much knowledge of problems and needs in these areas as possible. "Extend" their capabilities by the use of your own faculty and staff, augmented with the services of outside consultants who work as part of the educational planning team or the design team.

Many variables will influence the size and complexity of the planning staff—the chief of these being the size of the job to be done. One thing is certain, however: whether the job at hand involves planning and building a single college for 1,000 students or less, or several colleges for 5,000 to 10,000 students, the money spent for sound planning will be an infinitesimal share of the total building budget. And it can mean the difference between shoddy, marginal facilities, and outstanding facilities.

A district with a comparatively small "one-shot" building program may need only a one-man planning office, assisted by the staff and outside consultants. Often this one man may be the president who shifts some of his usual chores to others to free himself for this planning task. On the other hand, a heavily populated metropolitan district which is projecting phase construction of several colleges to 10,000 student capacity, may have a thirty to forty-year building program which will provide "careers" for a planning staff of three to five persons or more.

The size and composition of the planning staff will also be influenced by the extent to which state or other public agencies are involved in college planning and construction—either on an optional or mandatory basis. If a state department of education provides a well-qualified panel of educational consultants, and a division of architecture gives a thorough review and critique of plans, the district can manage with a smaller planning staff than would otherwise be the case.

Regardless of the size of the job and the planning staff, several basic guidelines and principles are pertinent. These will be outlined here along with the major functions performed by the planners and some possible job specifications which may be assumed by one person or divided among several.

First, all planning efforts should have as their foundation a statement of basic educational philosophy adopted by the board of trustees. Such a document should cover the basic objectives of the college, a summary of services it proposes to provide in meeting needs of its community, and other statements concerning the philosophical premises under which the college will operate. The statement of philosophy should not be overly prescriptive, but it should be specific enough to provide a framework into which all major decisions will fit compatibly. It is essential reading for both the staff members involved in planning and for the architects and other members of the design team.

Second, the responsibility for coordinating the planning should be centralized in one person, directly responsible to the district's chief administrative officer. This person—call him director of planning

for the sake of reference—should be the liaison between the architect and the district. There should be no direct contact between the architect and the faculty or other administrative personnel without the knowledge and consent of the planning director. This enables coordination efforts and planning responsibility to be concentrated in one person and avoids the situation of the right hand not knowing what the left hand is doing or has agreed to do.

Third, the respective roles of the "educational planning" team and the design team should be clearly defined early in the planning process. Everyone concerned should understand and accept the premise that it is the task of the educational planners to develop the program, identifying and outlining the functions to be served, and the responsibility of the architect and his supporting team to design the facility. Too frequently examples are seen of educators who are "frustrated architects" and architects who are "would-be educators" attempting to make decisions which belong on the other side of the demarcation line.

Tasks to Perform

Before suggesting some possible alternatives to administrative organization for planning, a brief overview will be given of the tasks included in the planning function. Following, in an oversimplified version, are activities which must be performed in the planning process, through whatever combination of regular staff and consultants is evolved. These suggest in broad terms the job specifications of planning office personnel, when coordinated with governing board, chief administrative officer, and business office functions.

1. Evaluation and selection of architects
2. Evaluation and acquisition of site(s)
3. Establishment of general architectural character, if the board desires to provide any guidelines in this regard
4. Identification of master planning and initial construction guidelines and limitations in such areas as enrollment capacity, budget, average class size, footage allowances, etc.
5. Determination of functional relationships of different facilities to each other on the proposed campus—the general orientation of such elements as major building complexes, parking, and athletic facilities
6. Coordinate work of faculty and consultants in development of educational specifications—translating the educational program into a description of space needs
7. Cooperation with architects in review, refinement, and approval of campus master plan, schematic design, and preliminary drawings
8. Approval of final plans and specifications
9. Bidding and awarding of construction contract
10. Continuous liaison with architect to make necessary decisions whenever problems and questions arise during the construction period
11. Continuous inspection throughout construction period and acceptance of finished job
12. Development and approval of specifications and arranging for purchase and installation of equipment and furniture.

Administrative Structure

How do you organize an administrative structure to accomplish the above steps?

The need for a key planner responsible directly to the chief administrative officer regardless of the size of job has already been identified. Assuming a long-range building program involving several campuses, the planning staff might also include a specialist in preparing educational specifications, and at least one technical assistant with architectural and/or engineering training and experience. These would be augmented by inspection personnel during the construction period.

The director of planning would assume major responsibility for assisting the chief administrator in preparing recommendations for the board on the first five steps above, and would give leadership at all stages. The specialist in educational specifications might be nominally involved in the early stages and would play the major role in accomplishing step six, followed by a secondary supporting role thereafter. Resources of the technical assistant would be called upon primarily on steps seven through twelve.

The role of the technical assistant and his relationship with the project architects must be clearly defined and continually emphasized. The danger of unwarranted interference and control by this person must be recognized and he must not be in a position of dictating to or "second guessing" the architect. His role should be that of assisting with development of instructions to the architects, providing a technical review of completed plans and specifications, and advising college personnel on educational implications of the architect's proposals. He also will make some owner decisions on technical problems which arise during the course of construction. A substantial argument may be advanced for the handling of this function by highly skilled consultants employed as needed.

In a multicampus system, consideration might be given to having the dean or president-elect of the proposed campus on the job during the entire planning period, assuming a major role in the planning process. However, the combination of an outstand-

ing facility planner and campus administrative head may be difficult to find in one person since the demands made on each are substantially different. Also, budget limitations might prohibit financing such a staffing arrangement. In any case, it would be highly desirable to have the dean or president-elect employed at least one year before the campus opens. This would provide him with a familiarization period, enable him to assume major responsibility for coordinating furniture and equipment selection and acquisition, and permit time for staffing and detailed curriculum planning.

Faculty Involvement

Little has been said concerning faculty involvement in the planning function. This can be either limited or widespread. However, if a district has one or more colleges in operation with a well-qualified faculty on the job, it should prove to be a valuable resource for planning. Even a several-member planning staff cannot hope to have the background and knowledge of the combined faculty talent in curriculum, teaching methods, and trends.

In a typical approach, faculty members are invited by the chief administrative officer or planning director to serve on planning committees organized according to related subject areas and major building groups. Following is a sample list of such a committee structure: library-learning center, campus center, administration and student personnel services, liberal arts, science, business education, fine arts, physical education-athletics, and physical plant auxiliary services.

Planning for faculty spaces (offices, work and preparation areas, lounge and food service facilities) might be handled by either a separate committee or assumed by the subject area and special building committees with coordination by the planning staff.

It is important that a close working relationship based on mutual respect and understanding be developed between the planning office staff and the faculty. This relationship will be somewhat delicate because of the planning specialists working outside of line channels with the faculty. The dynamism of the educational scene imposes a hardship on facility planners and further emphasizes the need for keeping the planning staff close to the curriculum experts who should be in continuous close contact with the changing educational picture.

What personal characteristics, education, and experience backgrounds are desirable in members of the planning staff?

The director of planning must be well versed and "sold" on the philosophy, organizational structure, and mission of the junior college. He will probably be more of a generalist, with fairly broad knowledge of all facets of the college operation. Some familiarization with the architectural and building construction fields is highly desirable, and skills in research would be useful. He should have strength in human relations—the ability to communicate and get along with people. A logical training and experience background for this person would probably be graduate work in educational administration, with emphasis on facility planning, followed by diversified experience as a junior college administrator.

The planning assistants might logically have more narrow training and experience backgrounds in their speciality areas. In addition to familiarization with the junior college, the specialist in educational specifications needs in-depth skills in both written and oral communications. It is this person, primarily, who will work with the faculty and consultants in crystalizing "the program" and translating this to written form for the architects.

The technical assistant should have his primary strengths in the architectural and engineering fields. Training and experience in either or both would be appropriate. He, too, should have a general knowledge of the junior college, as he will be called upon to give advice and make decisions with educational implications during the design and construction periods.

A district whose planning job justifies a larger office can further subdivide the skills needed, perhaps including an architect and one or more engineers to handle review functions of the technical assistant described above. A specialist in institutional research and a person to develop specifications for furniture and equipment would also be significant assets to a larger office.

Conversely, a smaller office must "wrap up" more skills in fewer persons or rely on outside consultants to assist with some of the functions.

Summary

This has been an overview of some of the considerations involved in administrative organization for facilities planning.

In summary, the administrative organization for planning is a crucial aspect of developing a new college.

Collectively, the planners need to be familiar with the junior college as an institution and what it hopes to accomplish. They need the ability to work well and communicate with a diversified range of people (architects and educators). Writing skills are important. A working knowledge of the architectural and engineering fields is desirable.

Perhaps most important, they should have imagination, vision, and creativity.

MESSAGE TO OUR ARCHITECT

By C. M. Duke Wilson

Recently, faculty from the various academic disciplines at Okaloosa-Walton Junior College in Valparaiso, Florida, were invited by their president, J. E. McCracken, to meet with him in an attempt to draft a message to the architect responsible for designing the new college campus. The theme was aesthetics.

Previous meetings with faculty had considered matters of a technical nature: parking; laboratory design; teaching auditoriums; and other functional concerns.

Hopefully, the content of the message on aesthetics would guide the architects in designing a college in which visitors would interact with the architecture and sense the school's philosophy of continuing education, an open door, and community service.

The following is a synthesis of the faculty's collective thinking. Should the architects capture and make even a part of this thinking a reality with design and brick and mortar, the effort, in all its abstractness, will have been worthwhile.

We should like the architecture of Okaloosa-Walton Junior College to implicitly and poetically suggest *buena vista* to all who visit and stroll through our campus; to suggest *buena vista* to the visitor on an hour's official call; to suggest *buena vista* each day to each member of the college community whether he be on our campus for one lesson, one day, or for several months or several years.

We should like the architecture to appeal to the senses so that one moves in an atmosphere of candidness, completely free from malaise; provide easy access to the whole and to the parts of the campus; to help us explain that opportunities exist for citizens of all ages who desire to acquire new educational experiences or sublimate existing knowledge and talents.

Every person should sense through the architecture a feeling of motion and activity, both vigorous and subdued; the architecture should convey movement, fluidity and industry as members of the campus community seek knowledge, values, and skills.

We should like the architecture to complement the republican atmosphere which prevails on our campus—that the only aristocracy is the aristocracy of merit. We ask architecture to help us explain that no degrees of status are superimposed *a priori* on any body of knowledge, craft, or skill. That is, the attainment of a student who learns tolerance will rank equally with another's achievement in mathematics; the skill of a retarded child who learns to tie his shoes will rank equally with the skill of an artist who excels in sculpture; a blacksmith's skill in shoeing a horse will rank equally with another's mastery of vertebrate anatomy.

We want the architecture to help blend labor and scholasticism, to give equal dignity to those who work with their hands and those who work with their minds, to show that any contrasts of one with the other serve only to enhance both. Yet, the architect should show that both the craftsman and the scholar can keep their individuality in an atmosphere of cooperativeness, interdependence, and mutual respect.

We should like architecture to capture the essences of those great gifts of western civilization which bear upon our college and which are promulgated in Okaloosa and Walton Counties: Athenian culture; Roman administration; Judaic emphasis on the family; Renaissance humanism; Puritan ideals springing from the Reformation; neo-classic republicanism and science; the great craft guilds of the fifteenth century with their emphasis on the respect for labor; idealism, and opportunity of Americana in the humanities, industry, agriculture, business, and commerce.

We should like the architecture to create intimacy by carefully planned pedestrian traffic, while providing space for the individual to expand as he interacts with the architecture—much the same as the individual who looks out over the vastness of the ocean and stands tall. As he moves about the campus the pedestrian should see chorus rehearsals, artists at work, metalsmiths at work, teachers at work. He should see exhibited, formally and informally, the results of their labors and studies and talents—an open-door atmosphere which, at the same time, preserves the integrity of the classroom.

We hope to capture *buena vista* in architecture: an open door; an open heart; an open mind.

But we are aware that intimacy overdone can create conflict unless the individual can retreat for study, prayer, and meditation. We ask architecture also for retreats—retreats where the individual may know quiet, peace, and simplicity.

"POUND-WISE" PLANNING

Educational Planning for New Facilities Costs Money
But a Lack of Good Planning May Cost Even More

By Max Tadlock and George Ebey

Almost everyone agrees that architectural form should follow function, particularly in planning educational facilities. Almost everyone also agrees that the educator and the architect must be equal planning partners in the design of new facilities and new campuses.

But in many instances the architect is the only planning partner willing and able to "put his money where his mouth is"—the only planning partner funded and staffed realistically for his assignment. In designing the architectural forms for a new $10 million campus, his fee will represent an investment of half a million dolars or more in his portion of the partnership. His architectural team will include soil engineers, structural engineers, landscape architects, designers, draftsmen, inspectors, and technicians who will devote their major energies to the design task.

On the other hand, all too frequently his educational counterpart, the community college president or superintendent, will invest what part-time energies he and his staff and faculty can spare from already crowded schedules. As a result, expensive modifications may be necessary if the facility is to meet the functional requirements of the program and staff it will ultimately house.

Because of neglect of educational planning, the architect often must assume the role of senior planning partner rather than that of coequal. He often finds himself in the uncomfortable position of having to do the educational as well as the facility planning. However, to be satisfied with such an arrangement

denies the synergetic force which can exist between coequal planning partners. To paraphrase architect Ernest Kump, whose designs for the Foothill and the De Anza community colleges in California and Pine Manor Junior College in Massachusetts have received national attention, the truly creative campus and facilities plan comes when a good architect has an educational counterpart who not only can tell him exactly the educational functions to be fulfilled but is secure enough in his reasons to literally demand excellent solutions.

The good architect has every right to expect that the college administration and faculty have been as industrious and exacting in their preparation of the educational plan as they expect he will be in the architectural plan. Strangely enough, most college districts budget from 5 to 8 per cent of their building costs for architectural planning, but seldom are they prepared to pay for the more modest costs of educational planning. Most professional planners estimate that it costs only about one-half of one per cent of the building costs to analyze community needs, translate these needs into educational programs, and prepare the educational specifications for the sites and facilities to house these programs. Whether the district releases its own personnel to staff such studies or hires a professional planning team as a supplement to its own staff, the basic costs will be much the same.

From the educational planning team effort, whether staffed primarily in house or from outside, should come at least two documents and preferably three: first, the long-range "district educational master plan," and then the general "educational specifications" for the campus or the facility under consideration. Ultimately the architect will need the third set of documents, commonly called "room specifications."

Too often the long-range districtwide educational master plan is a slightly expanded version of the noncontroversial educational philosophy of the district, prepared originally for the college catalog or for an accreditation team visitation. The campus educational specifications unfortunately are often hardly more specific and often must be drawn, detail by detail, out of the college staff by the architect in an endless round of meetings where:

1. Little time is spent on slippery basic questions like:

a. "As we have only x amount of money, what program do we cut back to pay for expanding the nursing program?"

b. "If we build a modern learning resources center, have we evidence that education at our college will be improved? If so, have we a plan to get faculty and students to utilize the center? Does this mean planning also for in-service training facilities and staff?"

c. "Recognizing that change is the only constant, what programs are we expecting to get rid of in the next ten years?"

2. The focus slips around to the more comfortable room specifications problems like:

a. "Frankly, I think you can't have too many electrical outlets in a room."

b. "Now I'm not an architect but I've made a little sketch that. . . ."

c. "Let me tell you about how they arranged the work tables in this laboratory I saw last summer."

Unless the educational planner is willing to accept a design by "Topsy," his first chore is systematizing his own planning procedures so that he has asked prior questions before dealing with subsequent answers. Defining each of the three basic planning documents needed is the first step in systematizing the planning effort.

District Master Plan

An educational master plan is not—repeat, not—an architectural master plan for a campus. It can be, and in many cases should be, developed before the district has hired an architect. It is a long-range projection of district needs matched against capabilities and probabilities. Even in its most limited form, the educational master plan must enable the board of trustees and the staff to make intelligent decisions on site selection, location of special complexes or special programs, general allocations of site space, general long-range construction schedules, projections of funding requirements, and the phasing of enrollments (in a multicampus district).

Such a district educational master plan should be sufficiently detailed to enable an architect, in consultation with faculty and administrative staff, to prepare his campus architectural plan (or "architect's master plan") and to initiate work on his schematic drawings showing major relationships on the site. For completion of his schematic drawings and his preliminary and working drawings, the architect will require additional information, which should be provided in educational specifications and room specifications after the district master plan has been approved by the board.

A properly detailed district master plan should include:

1. A definition of the purposes and functions of the district and of the organization required to achieve them

2. An analysis of community educational needs and the relationship of existing educational resources (local high school programs, other college and industrial training programs, etc.) to the community college program. As part of the needs study (and frequently requiring special attention as a basis for long-range vocational-technical

facilities planning) is the analysis of occupational opportunities and future trends in the greater labor market area serving a mobile population, an area which may far exceed the district boundaries

3. The translation of such needs, opportunities, and trends into possible community college educational programs

4. A projection of enrollments and costs in these programs, a time-chart showing the phasing in and out of specialized educational programs, and the allocation of programs by campus in multicampus districts.

5. A determination of general space and site requirements to house these programs and provide for projected growth, based upon accepted planning factors on room use and station utilization. (Requirements of functional relationships between the major building components—e.g., the library, science complex, administrative offices—should be noted at this point.)

6. If a multicampus plan, the phasing of construction plans on each campus from initial site acquisition to the campus of ultimate size

7. A projection of capital outlay requirements, a determination of priorities on capital outlay expenditures, and an analysis of probable sources of funding.

Above all, the district master plan must look into the future a bit farther than the eye can see. This look ahead is particularly critical in site selection. Certain sites which appear excellent measured against the next ten year's growth patterns may be poor choices when considered against the longer-range population patterns of the district. Further, a campus chosen to house programs justified by today's industrial needs may be completely inadequate for tomorrow's requirements. A building or complex which seems flexible by today's teaching standards may actually inhibit the use of tomorrow's advanced educational technology.

Unfortunately, with such complications, preparing the modern community college educational master plan is no longer the gut-level exercise in academic intuition it once was. Although many college administrators feel compelled, either by board pressures or by personal needs, to demonstrate their mastery of all questions educational, the time for such solo performances has long since passed. Like his business and industrial counterpart, the college administrator must show his executive ability by organizing or hiring a team effort which will yield answers he can support and which will support him.

Ideally, if there were no pressures of time, and if there were no existing programs and no established faculty and student body to deal with, development of the district master plan would follow this sequence:

NEW DISTRICT

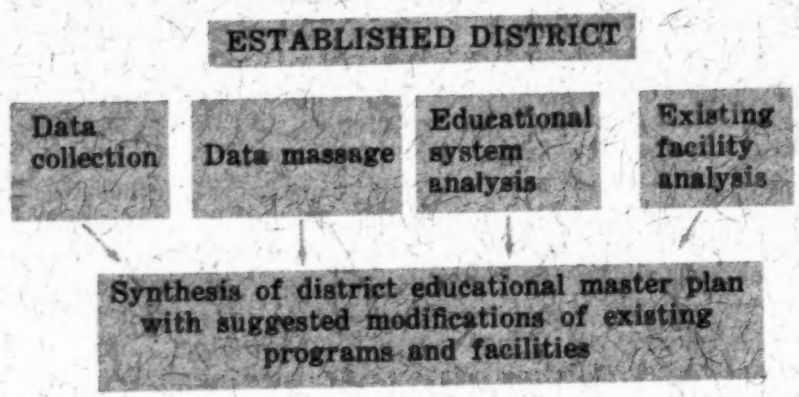
Data Collection: A study in depth of both the local and greater community to be served. This should yield hard data describing past and present population characteristics, occupational patterns and needs; zoning, land use, traffic, and transportation factors; public attitudes, policies, and influences relating to education; private and public educational patterns and needs; educational fiscal support.

Data massage: A description of the community and its needs related to regional and national factors. This should show intermediate and long-range trends, timelines, and goals. It should yield firm estimates of particular district needs: sites; probable enrollees in particular programs; programs to be phased in and out; construction needs and costs.

Educational system analysis: An analysis of the educational programs, operation, staff, and facilities needed to yield the greatest student and community benefits for the time, energy, and money to be expended in this community. This demands rigorous examination of innovative programs in operation across the country as well as careful analysis of the traditional teaching/learning patterns.

Synthesis of district educational master plan: An extended think-tank exercise involving staff, consultants, and board. The result is publication of the plan with supporting evidence and arguments.

An established college has faculty and students and existing programs to deal with as additional planning factors. This does not make long-range planning impossible; it only makes it somewhat less neat. No moratorium on education can be declared while planning studies are completed. Instead the planner conducts the first three phases simultaneously, at the same time working with the faculty (and students where appropriate). In addition, an extensive analysis needs to be made of existing facilities, utilization factors, alternative uses, and necessary modifications.


ESTABLISHED DISTRICT
Data collection
Data massage
Educational system analysis
Existing facility analysis
Synthesis of district educational master plan with suggested modifications of existing programs and facilities

Educational Specifications

In preparing the final document, the educational planner must keep in mind that the district master plan should guide the architect in preparing a general campus master plan or relating a proposed new building or complex to an existing campus plan. However, the architect will require more than this general guidance. Thus, the next educational planning step should be the preparation of educational specifications.

Although "ed. specs." is as loosely used a term

as "master plan," we use it to mean the functional requirements instructions to the architect. They relate to a single facility, or to the facilities of a single campus.

Educational specifications must enable the architect to proceed immediately to the preparation of his campus master plan and, as a minimum, to his schematic drawings for initial construction. Ideally they should enable him to complete his preliminary drawings as well.

For convenience, it is also well to consolidate in one published volume the pertinent information relating to the campus, whether this information is available elsewhere or not. Such a procedure facilitates the approval of educational specifications by the board of trustees, the initial planning by the architect, and the subsequent detailed planning by faculty and staff. And be advised, if that volume is over one-half inch in thickness, the architect (and others) may choke on its mass.

The educational specifications volume might logically contain the following sections, some of which overlap the master plan:

1. General background and planning factors, such as the nature and mission of the district, the characteristics of the community, the sources of students, campus enrollment projections (including phasing of growth, if applicable), the ultimate planned enrollment of the campus, the district policy on aesthetics, a summary of the curricular plan (including phasing, if applicable, especially in the occupational programs), the expectations for flexibility and innovation in the planning, the relationship of day and evening programs, provisions for parking, arrangements for special educational hardware (television, computers, etc.), and even special arrangements for handicapped persons.

2. A summary of gross square footage requirements by major component or building complex and by enrollment phase, if phased construction is planned. For example, in the educational specifications for Cañada College in California, planning is phased in three enrollment levels: 2,000, 4,500, and 8,000 students. Gross square footage and outside space requirements are shown at each enrollment phase for the following complexes: academic, fine arts, science, vocational-engineering-technical, library, student center, administrative and counseling, and maintenance.

3. A section on each educational complex to include (a) a general statement on the functional requirements of the complex, (b) an identification of the number of spaces by the type and net square feet at each of the enrollment phases, (c) a conversion of net square feet to gross square feet for each phase, and (d) for the first phase of construction, a detailed description of the functional requirements of the spaces in each center and their relationships to other spaces.

Here is an example of a general statement on the functional requirements of a fine arts complex: [1]

The fine arts center is planned as a multipurpose facility to provide instruction space for art, music, and drama and to include a performance hall for college and community use. The performance hall will serve as a theatre for the drama department, a concert hall for the music department, an auditorium for community events, and a place for student meetings and for large group instruction. Its lobby will be used as an exhibit area, particularly for the art department.

Accordingly, the fine arts center should be a distinctive structure or complex reflecting its functional and aesthetic purposes. Though it does not require a central location, it should be readily accessible from other parts of the campus and should be situated fairly close to the student center, the administration building, and academic facilities. Because of its use for functions attended by the public, it should be near a major entrance to the campus and should be easily reached from parking areas.

Special attention will be required to provide effective lighting for the art department, acoustical control for the music department, desirable space relationships between the drama department and the performance hall, and security for exhibits which are expected to occupy the hallways of the buildings and the lobby of the performance hall.

Illustrative of the functional specifications for the spaces within a complex are the three following examples, one for an academic center, one for a library, and one for a men's gymnasium: [2]

Academic center: General classrooms (language arts division). Student stations: 350. Approximate net square feet: 6,500.

Ten rooms, each approximately 650 square feet, 27 x 24 feet, each to accommodate thirty-five students. The division requests that the rooms be as nearly square in shape as possible. Only one entrance is required. The rooms must be easily darkened for audiovisual and must provide an outlet for television. On the front wall there should be at least 16 feet of high quality chalkboard with a minimum of 6 feet of tackboard on a side wall. Three of the rooms must be equipped for foreign language instruction. These rooms should have chalkboard on three sides. Each room should have a lockable storage cabinet, $2\frac{1}{2}$ x 4 x 6 feet for tapes, records, and other equipment. Provision should be made for built-in speakers for the tape recorder. The division prefers high windows with tackboard under the windows.

Library: (Instructional materials center.) Printed materials, reading area. Approximate net square feet: 4,000.

Designed to seat a minimum of 200 students at one time, this area should be divided into sections by the book stacks so that traffic may flow into and around the books. This area, and the stack area to which it is related, should be without columns or pillars. At least one half of the seating stations should be of the carrel type. They should be so located and arranged that the student traffic will exit out one doorway to allow for control.

Physical educational facilities: Men's gymnasium. Approximate net square feet: 15,000.

This large gymnasium serves as the college auditorium and as the largest indoor teaching station for the physical education program. It should measure 112 x 128 feet, for a total of 14,336 square feet. Immediately adjacent to the gymnasium there must be a storeroom of 600 to 700 square feet for storage of movable stage and stack-

ing chairs. The main gymnasium floor must have a regulation central basketball court for intercollegiate games, but must also be arranged for class use of three basketball cross-courts, six badminton courts, or four volleyball courts. For intercollegiate games and for public events there must be folding bleachers for 1,300 persons, with foam rubber padded backs and seats. Special lighting and sound system for the stage area must be installed.

Acoustical treatment of the room is critical and the ventilating system must not create a noise problem. Enclosed connection to locker rooms is necessary. The gymnasium floor will be select hard maple with high quality finish. Provision for ultimate installation of a press and television booth should be made. Electric timer and scoreboard will be installed. Recessed drinking fountains should be provided. Floor plates will be placed in the floor for rigid mounting of standards for nets, and ceiling mounts for rope climbing will be required. The entire room should be windowless.

Room Specifications

Educational specifications are intended to provide the architect the information necessary to complete his planning through preliminary drawings. However, prior to the preparation of working drawings, further detailing is needed by the architect. An effective method of systematizing this detailing is through the preparation of what are usually called "room specifications." They provide considerably more detail on each space and logically should be contained in one or more unpublished working volumes, with copies for the architect and for the district facility planning coordinator.

These room specifications are prepared with the active participation of the faculty and staff who will use the facility and are reviewed by the college facility planning coordinator. Sometimes they may be accompanied by a rough layout prepared by the instructor or by the coordinator. Sometimes, as in the case of science laboratory cabinetry or a performance hall stage, they may be supported by detailed scale drawings furnished by a specialized professional consultant working jointly with the faculty and architect.

In effect, room specifications are an extension of educational specifications to the final detail level, and some planners prefer to include them under the general category of educational specifications. However, identifying them as a separate planning stage has certain advantages, particularly in the most effective utilization of personnel. If the general functional requirements being developed by the district planning team are prepared without the delays caused by detailing, the architect may move ahead more rapidly with his first planning stages. At the same time, the departmental (or divisional) planning teams composed of faculty and staff who will be using the facilities can focus on the planning of detail where their experience will be most useful.

Many of the detail items on which the faculty and staff may want to advise the architect can be listed on a check list like this one developed for a well-planned college:

Doors
Windows
Flooring
Acoustics
Hot water
Cold water
Natural gas
Compressed air
Heating
Ventilating
Clocks
Electrical outlets
TV outlets
TV control boxes
Telephone outlets
Public address system
Sinks
Drains
Drainboards
Traps
Hoods
Drinking fountains
Drapes
Shades
Blinds
Coat racks
Mailboxes
Toilets
Showers
Light switches
Other utilities
Lockers
Cabinets
Counters
Built-in drawers
Built-in storage
Other storage
Chalkboards
Tackboard
Map rails
Other teaching aids

For most rooms, many of the items on this check list will not apply. For others it is important that the architect be advised of the user's special requirements by the addition of a special requirements schedule.

Preparing such a check list for each separate room or facility, with a special requirements schedule attached where applicable, systematizes the communication from the user to the planning coordinator and then to the architect. However, this document and the other two which preceded it are no guarantee that a brilliant solution will result. But they are the best guarantee the district has against, a bad—or an unnecessarily expensive—solution.

Education planning costs—it costs time, money, energy, and talent. Unfortunately, so does nonplanning, and too many districts seem willing to pay this latter price. As Samuel Sava of the Kettering Foundation pointed out at the National Conference on the Experimental Junior College at the University of California at Los Angeles, 70 per cent of the junior colleges created in 1966 were "just copies, sad copies" of existing four-year institutions. In the planning, the educational partners had neither examined their community needs in depth nor analyzed modern educational methods, systems, and facilities to see how best their colleges should function as unique community institutions.

What price penny-wisdom!

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[1] *Educational Specifications, South Campus* (subsequently named Cañada College), San Mateo Junior College District, San Mateo, California, January 1965.

[2] Ibid.

SELECTING THE DESIGN TEAM

There are Many Factors To Consider —And the Stakes Are Great

By Bill J. Priest and Enslie O. Oglesby, Jr.

DESIGN: *To Plan. Make preliminary sketches of the arrangement of parts, details, form, color, etc., especially so as to produce a complete, artistic unit. Artistic invention.*

The definition is rather simple, but, applied to the creation of a new college the implications are tremendously significant. The team responsible for the design holds the keys to what the college will look like, whether it will function effectively, and whether it will provide the stimulation and inspiration to its users that outstanding architecture should provide.

Previous articles in the *Journal* have emphasized the need for an able and cooperative educational team as the first part of the total planning group which is to produce a new college. We wish to establish the importance of continuing the development by assembling a dedicated and talented group of professionals for the second part—the design team. The composition of that team will be identified along with proposed approaches to its selection.

Just what are the components of a design team regarding the creation of a new junior college? What functions does each member of the team perform? How do they relate, and who coordinates the several elements?

The focal point of the team, of course, is the architect. The selection of an architect is probably the most important, and if done properly, the most difficult task faced by a board of trustees and chief administrative officer.

It is desirable that the architect become the coordinating agent for all other facets of the design team; hence, he should be selected very early in the planning process, in time for him to be involved in the selection of the other supporting services which round out a well-balanced team. These might normally include regional or community planners, engineers, landscape architects, interior designers, and special consultants in such areas as acoustics, graphics, food service, and theater design.

A simple approach to architect selection might be to visit a number of completed construction projects, both in and out of the higher education field, then to select the firm which designed the best facility.

In all probability, however, this would not be the best approach. A finished building is the product of a joint owner-designer planning team working under unique circumstances in a specific location.

The exact circumstances obviously cannot be duplicated.

There are many considerations which will probably influence your architect selection.

Hopefully, a selection system will be evolved which permits evaluation of available architects according to criteria you have established for your specific job.

These criteria should include such basic factors as capability of the firm to handle a job of the complexity and size you propose, within timetable and budget limitations; design and master planning ability; integrity; reliability; stability; and continuity, etc.

How to measure these things is the crucial question. First, it may be appropriate to make a few comments on assembling a panel of prospects from which to choose.

Whenever a new college is in the offing, the attendant publicity is certain to bring contacts and inquiries from many architects interested in the project. It is suggested that a list be compiled for preliminary screening, including these, plus any others submitted by board members or administration, and those recommended by other knowledgeable persons in and out of the community—critics, other architects, qualified laymen, etc.

It is further suggested that requests for meetings with architects be declined until formal selection procedures are established and under way.

A major junior college project will probably attract the interest of more architects than can be evaluated in depth due to the time required. All architects on the list might be invited to complete a brief questionnaire and submit their firm's brochure or other pertinent written material. These can form the basis for a superficial evaluation of training and experience and representative work of the firm and its principals.

The extent to which the board of trustees desires to become involved in the early screening stages depends entirely on the available time and preference of the members.

If the list is large and the trustees' time limited, it may be appropriate for the administrative staff to conduct a second round of screening.

Architects who appear to be "in the running" after the initial screening might then be invited to a personal interview session with the chief administrative officer and one or two planning staff members.

This session of one hour or less should give the architects a preliminary orientation to the proposed project and provide answers to their questions concerning the job. The majority of the time, however, should be devoted to bringing out information the client needs for his evaluation. This might be further elaboration on material provided with the initial questionnaire concerning experience of the firm in work of the type you propose. The interview is especially helpful in revealing the architect's attitudes and approach to your job, and the probable compatability of the two parties to the pending "marriage." Good preparation, attitude, talent, and ability are obviously very important.

It is important to remember that some architects may be better "salesmen" than they are designers, and the correlation between an impressive articulate presentation and the ability to design an attractive, functional college is not necessarily positive.

The ability to communicate—both as the giver and the receiver—is important, however, and the interview may provide some measure of this ability.

The staff interview should provide the screening committee sufficient information to narrow the competing firms down to whatever number the board of trustees desires to interview. This group should then be given a "fine-tooth comb" treatment before a final selection is made. This means a visit to and thorough critique of completed projects. It means a careful check of references such as previous clients, contractors, and possibly other architects. The "previous clients" might well include such persons as the head custodian and maintenance supervisor, as well as teaching and administrative personnel, in the case of other schools. Visits to the architect's offices for a personal look at the firm's staffs and production capabilities might be scheduled as part of the final evaluation.

Sample Evaluation Worksheet

One approach to the task of architect evaluation is the use of a worksheet to guide the assembling of data at all stages of the evaluation process.

Following is a possible list of topical headings and questions from such a worksheet:

ARCHITECT EVALUATION

Part I: Professional biography and related data.

Name of firm: .....

1. Principal partners. (Names, summary of training, length and location of experience, etc.)
2. Outline of personnel responsible for project (including resumes of persons not included in number one above).
3. Proposed supporting services (engineers and other technical consultants and advisers).
4. Record of experience in design and supervision of construction (examples of jobs completed, both in and out of junior college field; year constructed, size of contract, etc.).
5. Date of organization of firm in its present form

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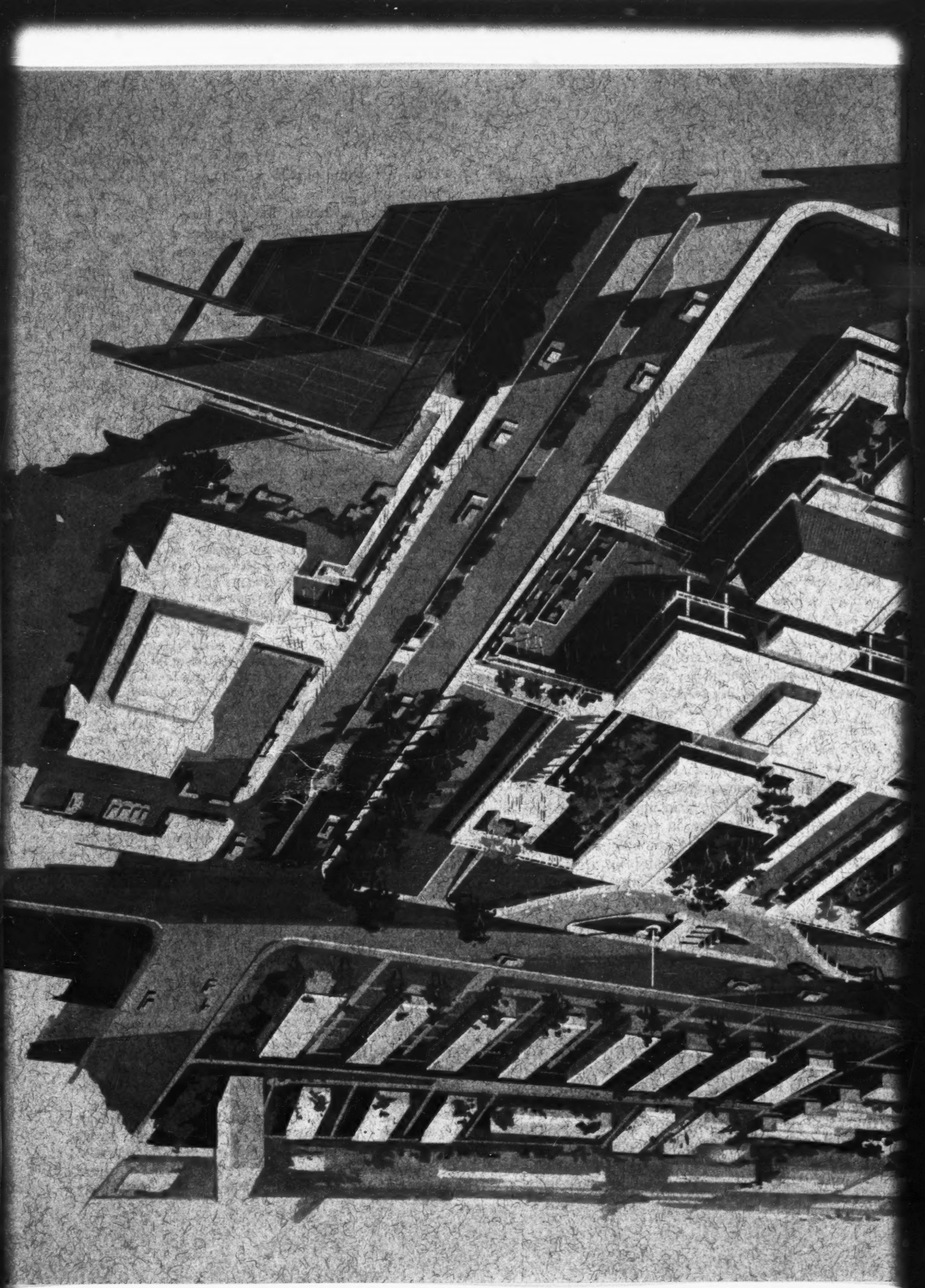


(principals and associates), and of any predecessor firms.

Part II: Summary of findings of interviews, reference checks (former clients, contractors, etc.), and visitations to completed projects.

1. Evidence of capacity to do job of this magnitude against timetable. (Successful completion of similar size jobs; size and experience of staff—permanent or augmented. Firm's workload, including present and future commitments.)

2. Record of firm in solving architectural problems within budget allocated. Record regarding change orders needed to correct oversights of architect.

3. Integrity and reliability. (Attitude toward professional responsibility; history of performance regarding ethical, stable conduct in fulfilling commitments to client; promptness.)

4. Architect's intentions concerning supporting services and probable quality of such services—engineers and other technical consultants and advisers.

5. Record of cooperative workmanship with client. (Capacity to work harmoniously and efficiently with designated representatives of client.)

6. Evidence of firm's (individual or collective) interest and involvement in community and sensitivity to community factors which affect and are affected by project.

7. Imagination and creativity. (Design awards? From whom?)

8. Contract administration—effectiveness as agent of client. (Objectivity and fairness in interpreting contract. Thoroughness in handling communications between owner-architect-contractor; business details, effectiveness of inspections and supervision, standards of workmanship required, follow-up of project to obtain correction of problem.)

9. Effectiveness in translating client's requirements, both philosophical and specific, into architectural terms. Reflection of program in basic relationships, circulation and integration of site and all architectural elements.

10. Quality of design development. (Effective use and coordination of consultants. Selection of appropriate materials and their use in achieving both aesthetics and function. Balanced integration of all elements of design, including landscaping, structure, utility systems, interior design, graphics.)

Alternatives to Consider

This brings us to a few other considerations which may be involved in analyzing and evaluating the data gathered and making the final decision. Some of the alternatives which the board must ultimately face according to its own philosophy or feelings include: should the architectural firm be local or nonlocal? New or old? Large, medium, or small? Experienced or nonexperienced in the junior college field?

The board must decide whether it wants to "gamble" on a relatively young and inexperienced firm which appears to have tremendous talent and potential; or play it safe with an old, experienced firm which has much work on the landscape as evidence of its age and ability.

There is a simultaneous need for innovation and stability. Certainly the firm must have sufficient size and professional know-how to produce a multimillion dollar job. But bigness is not necessarily goodness. You will want to be satisfied that your job will not be only one of many in a huge production mill, relegated to junior members of the firm rather than receiving the personal attention of the top-level associates.

Should you insist on an architect with junior college experience? You may have to go out of town to get this, with the resulting affront to the local professionals in the field who are likely to be more sensitive and responsive to the character and mores of the community, in both physical and intangible terms, than nonlocal firms.

Several outstanding junior college plants in the country were designed by architects doing their first junior college job. However, most architects will admit that their second and subsequent jobs of a given type would probably be better.

These are questions that cannot be answered by some magic formula, as there is no right answer. The solutions must be reached through painstaking evaluation of the alternatives and much deliberation and soul searching.

One approach to the question of local vs. out-of-town and experienced vs. nonexperienced in the junior college field is to arrange a "joint venture." Under this plan, a local architect would affiliate with a nonlocal firm with depth and experience in planning junior colleges. The mechanics of the arrangement can vary—ranging all the way from a full partnership to merely using the outside firm as a design consultant to the local firm. Regardless of the approach used, it is important that the roles and responsibilities of the respective parties be clearly delineated and understood by all concerned.

Setting the Fee

The fee structure should be clarified early in the negotiations, and it may be higher if more than one firm is involved.

Although it is important to establish a mutual understanding of the fee structure and what it includes, colleges are cautioned to avoid having architects "bid" for the job. In the final analysis the determination of an architect should be based on considerations other than financial.

An adequate fee should be paid. (There is small difference in the total cost of a project between the minimum and maximum fee.) However, it is well to seek assurance that the architect knows how to earn his fee. Those accustomed to doing "cut rate" work have a *modus operandi* not easily altered.

The next element of a design team normally needed after selection of the architect is the regional or community planner to assist with evaluation and selection of sites and related activities.

With this service represented on the design team, the college can concern itself with such long-range planning factors as regional and community relationships, traffic and transportation patterns, utilities, land use and zoning, climate, topography, drainage, circulation and parking, and other physical and economic factors.

A good architect will be familiar with sources of community planning assistance and advise his client on an appropriate arrangement for this service. The service may be provided by a consulting firm or individual, or by a public agency such as a city or county planning department.

Engineering Services

Engineering services are perhaps the most basic of the supporting services needed by the architect and these are normally provided by him as part of his fee. These will always include electrical, mechanical and structural engineers, and frequently civil engineers.

Two schools of thought exist in the architectural fraternity on the alignment for engineering services. Some of the larger architectural firms maintain a staff of engineers within their firms, described as the "in-house" system. They deem this to be advantageous because it permits better coordination and control.

The prevailing practice, however, is for architects to align with independent consulting firms for engineering services, and many excellent firms are available for this purpose. The theory advanced in support of this arrangement is that the best engineers are in business for themselves and therefore the best services are available through this approach.

A mutual respect and close working relationship between the architect and engineers is essential.

Therefore, while reserving the right to approve them, the client's role in their selection should not be one of dictating who the technical team should be. Everyone concerned should resist political or other pressures to prescribe a given firm of engineers, as such pressure may be the best evidence of unfitness.

Landscape and Interior Design

The next two facets of the design team—landscape architecture and interior decoration—should likewise be coordinated by and responsible to the architect, with their selection approved by the client. Some architectural firms maintain staff specialists in these areas. The prevailing practice again, however, is the use of consultants.

The landscape architect specializes in land use, climate, vegetation, topography, and drainage. His role goes beyond simply designating locations and varieties of trees, shrubs, flowers and lawns. He is an important member of the team in planning the total physical and emotional environment of the campus. This service may overlap that of the community or regional planner, and sometimes offer a combination of these closely related services.

The interior designer is often an architect by training with specialization in the field of interior design. He is a valuable consultant in coordinating the interiors of the total campus, and in advising on selection of furniture appropriate for the campus plan.

Special Consultants

The last facet of the design team consists of special consultants of the type and variety deemed necessary by the client and architect.

These are in areas such as acoustics, graphics, food service kitchens, theater design, and so on, in which a high degree of specialization may be needed to achieve the best design from both a functional and aesthetic point of view.

Unless a college or its architectural firm feels it has resources with considerable depth in these areas, it may be desirable to arrange for such consulting services to assist the architect. Again, these should be selected jointly by owner and architect and made responsible to and coordinated by the architect.

Master Planning

Master planning ability was one of the points listed on the sample evaluation worksheet reproduced earlier. This facet of the planning task is one of the most important and merits special emphasis in assembling a design team. Some of the

greatest sins are committed in the area of inadequate master planning, with the result that excellent design of the original phase is often wrecked by subsequent phases.

Few, if any, college boards and administrators can truthfully say unequivocally that their college will never be expanded beyond its initial size. Therefore, very careful master planning should be done at the outset to assure that the college will appear and function effectively as a complete college at each stage of its development and not as a fraction of a college, or as a college with afterthoughts.

Few architectural firms have had successful experience in master planning junior colleges for orderly and logical expansion through several phases of development. Even though it is inexperienced in this area, a competent firm may be able to produce a good master plan if the client's requirements are spelled out and emphasized. It may also be possible for a local architect to retain the services of a nonlocal firm with successful experiences in master planning to serve as a master planning consultant.

The subjects of site planning, landscape design, and master planning are closely related and merit considerable emphasis and close coordination in assembling and using the design team.

More on Fees

How are the architects and consultants paid? Arrangements vary from firm to firm and from locale to locale.

The most common procedure for payment of architects is a fee based on a percentage of the total construction cost. Local chapters of the American Institute of Architects normally have established recommended fee structures for different types of work in their areas.

Another approach is a cost of time and materials fee which may be based on a formula such as two and one-half times the cost of drafting time provided by the architectural firm.

Still another approach is a fixed fee negotiated by the architect and client for a given job.

When the percentage fee pattern is used, this normally includes the cost of engineering services. Other consultant services may be included in the architect's fee under the contract negotiated with the client. More commonly, however, they are not included in the basic fee, and the client reimburses the architect for any fees paid to the other consultants. The fees are usually on an hourly basis, but may be a percentage of the contract expenditures in some areas, such as landscape architecture.

One variable in the fee structure results from the extent of long-range master planning the architect is required to do. A comprehensive master plan providing for extensive future campus expansion in a logical and coherent manner will normally merit a separate "cost plus" or negotiated flat fee over and above the architect's basic fee for planning initial construction.

As this brief overview indicates, there are many alternative approaches to the method of payment for services of the design team. It is important that an understanding be reached between architect and client at the time their contract is negotiated on what supporting services will be needed and how they are to be paid.

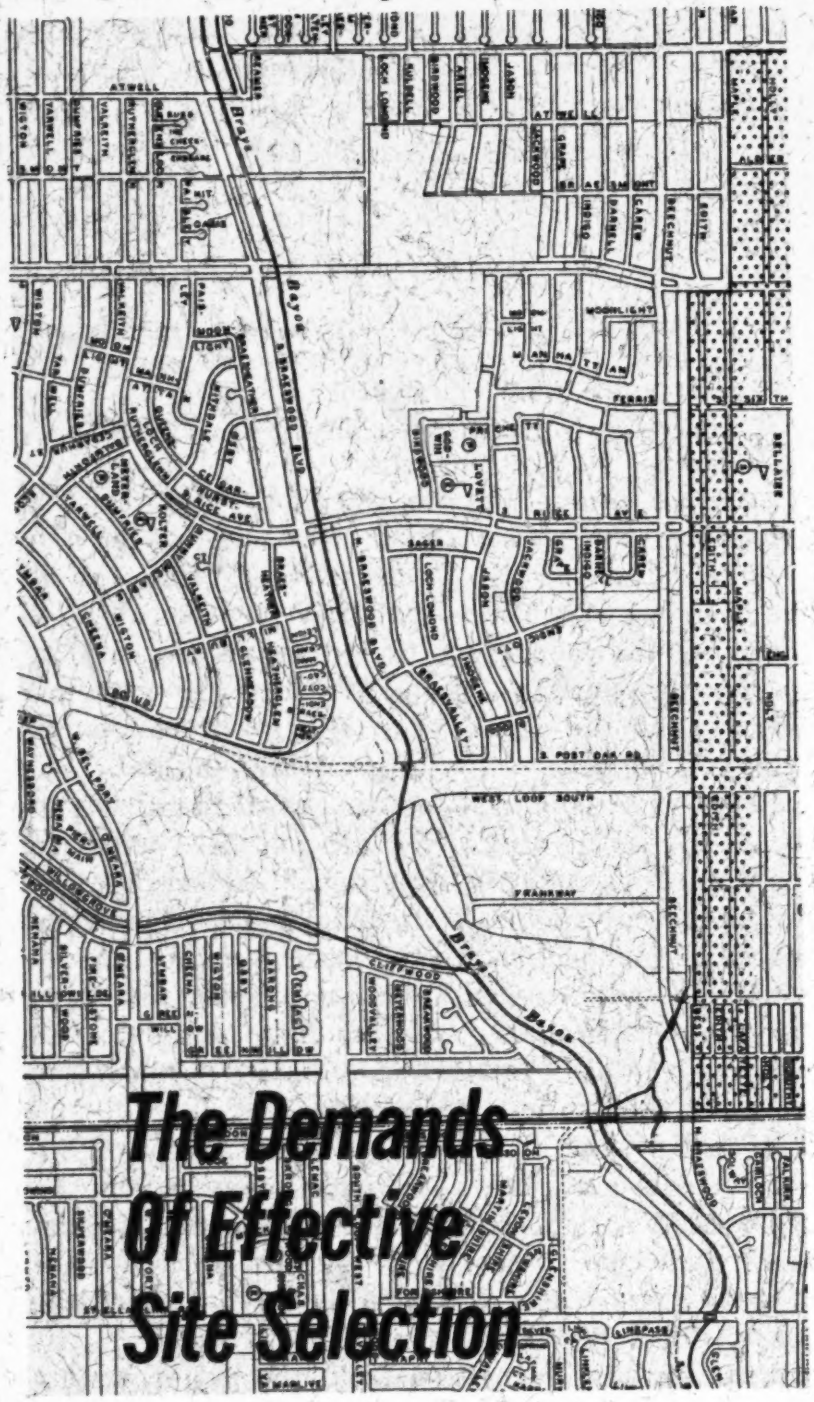
Working Relationships

A few final words of caution are appropriate in establishing working relationships between the client's educational team and the architect's design team. The need for cohesiveness on the part of the design team has been established. This results from all elements of the team being made responsible to and coordinated by the architect. It permits the client to deal with only one principal in the design team and hold him responsible for the performance of all elements of the team.

It is also necessary that members of the educational team and the design team recognize and respect each other's respective areas of competency and authority. The designers must stay out of the realm of educational decision making. Likewise, the educators must respect the professional ability of the technical personnel and leave them free to do their jobs. An architect's pet theory on what's wrong with education, and educator's ideas on the latest in design are both likely to be out-of-date or inappropriate to the project.

Concerning architect-client working relations, a good professional should always give his employer the best of his thoughts, but be able to accept directions and abide by decisions that are not his to make.

In summary, the task of assembling a design team should not be taken lightly. It involves some of the most important decisions the governing board will ever make as the stakes are great. There are many alternative approaches to the task, but whatever approach is taken should assure the college a comprehensive evaluation of the available architects, engineers, and special consultants. The efforts should produce a competent, talented design team ready to face the challenges before it with an attitude of confidence, anticipation, and excitement, balanced with a feeling of humility and eagerness to learn. With such a combination of skill and attitude the chances of success are great.



The Demands Of Effective Site Selection

By Louis E. Finlay and Robert E. Lahti

A new board, a new president, a new project. Sound familiar? Yes, another community has just voted a new community college to serve its citizens. Enthusiasm is high and the key decision makers are in the starting gates—where should the board and president begin? Perhaps the most logical question to ask is, what other members should be included on the planning team and in what sequence?

In most cases site selection has been considered prior to the successful referendum. If the community was wise, it left this important final decision to its board. The total team in site selection should include the board of trustees and its administrators, and the architectural firm which will design its facilities. In order to gain insight into the interaction involved during site evaluation and selection, let's imagine a hypothetical conversation between the administrator, representing the college, and the campus planner, representing the design firm.

Administrator: As the administrator representing our college board and my associates on the staff in this study. I fully recognize the long-term implications involved in selecting a proper college site. And too, I think it is important that the architectural firm be brought into the picture early enough so that the college can benefit from its knowledge and experience in site selection. This certainly gives the selection process an important added dimension.

Planner: We are always happy to be involved at this stage since our ability to design a satisfactory junior college campus is related very strongly to the site. Too many junior college boards make the mistake of selecting the site, then retaining the architects.

Administrator: It might be good if we started by establishing the basic criteria usually used in judging potential sites. Certainly these would include:

1. Cost
2. Location within community
3. Size or area
4. Availability of public utilities
5. Access to major streets.

Planner: Yes, these are all very important. The architect also worries about such things as topography and soil conditions, adjacent land use and the factor we label "emotional environment."

Administrator: Certainly the consideration of cost is an important one, one to which the taxpayers are particularly sensitive. However, a superior site, although higher priced initially, may end up being a very good long-term investment. We had hoped a site might be given to us; but, so far, we have not been offered one. The present possibilities range in price from $4,000 to $12,000 per acre. At this point, we need your evaluation of any unusual development costs for each site that would need to be added to the basic cost of acquisiton. What elements have you found to be significant when analyzing costs?

Planner: There are several factors that must be considered, simply to be able to compare total costs. Other than acquisition costs, there are extra or unusual costs for such items as:

1. Clearing any existing structures
2. Utility extensions or provisions
3. Road extensions necessary to serve the site
4. Specific traffic control devices or development on public highways or streets
5. Special foundations if soil problems exist
6. Site drainage.

And even beyond that is the necessary consideration of value received for the expenditure involved. Value is a tough judgment, but it is perhaps the most important aspect of cost analysis.

Administrator: Tied very closely with cost is the size of the site. Very often the proper size is underestimated. New junior college boards generally use the reference point of a large high school campus or a residential college campus. Neither dimension fits the community college need. Am I right in assuming this difference makes the community college somewhat unique because site area requirements depend somewhat upon the environmental character of its location?

Planner: Yes, and I would put emphasis on environment at this point. I would even try to typecast the various available sites into two categories—urban and suburban.

Administrator: I am generally aware of some of the main differences between urban and suburban campuses, but what are the differences from an architectural viewpoint?

Planner: The urban site will demand a more compact campus because the area is usually very limited. Many times this means high-rise buildings instead of the typical two, three, or four-story buildings on a suburban campus. Recreational and physical education space will be severely limited. A medium to fairly large community college may even require auto parking garages.

The suburban site generally offers ample land for a larger campus area with surface parking lots. The setting can vary greatly from a utilitarian site, without park-like potential, to the very inspiring site, with a dramatic setting, a spectacular view or some other opportunity to create a unique setting for the campus.

Administrator: Our board has set a policy of a 5,000 F.T.E. (full time equivalent) maximum student enrollment on our first campus. Additional campuses are to be developed in the district as the student enrollment exceeds accommodations provided by the first campus. With this policy, can we establish a rule of thumb for areas required by urban and suburban sites?

Planner: Yes, we can establish a reasonable range of area by type of space needed (academic, physical education, parking, and open space). The educational program prepared by your staff with consultants has given us a good basis for calculating our academic land area needs. The other space needs can be calculated using reasonable planning criteria. A fair example for a 5,000 F.T.E. campus would be as follows:

AREA REQUIRED FOR 5,000 F.T.E. CAMPUS

	Urban (Acres)	*Suburban (Acres)*
Academic	8 - 10*	30 - 37**
P. E. fields and courts	5 - 14	15 - 30
Parking and drives	13 - 20	25 - 35
Open space	5 - 6	20 - 48
Total	30 - 50	90 -150

* Assuming a floor area ratio (total land area divided by gross floor area) of 1.5, with a 100-130 square feet of floor area per F.T.E. enrollment.

** Same as above except for a floor area ratio of 0.4.

Administrator: Location within the district is a prime concern of the board. The citizens of the community are vitally interested in it also, but it has been my experience that they too often base a choice of site location on limited population concentration projections. Many districts are growing rapidly, and the distribution of student residences will be quite different within another decade.

Planner: This is true, and those future citizens in the new and growing areas are not here today to represent their interest with regard to location. At least a fifteen-year projection of population patterns should be made. Usually the local municipal or regional planning commission can provide this type of information to the college. The closer to the centroid of this projected population pattern, the more desirable a location becomes.

Administrator: The next important criterion we come to is access. This could mean many things. To me, access is not so much a consideration of distance and time of travel to the site as it is ease of vehicular circulation at the site. What should be considered in order to make access to and from the campus an easy transition from the major streets serving the campus?

Planner: Several factors contribute to a site's possessing adequate potential to allow proper patterns of ingress and egress. The shape of the site, number and character of adjacent major streets and highways, traffic volume and traffic control near the campus—all of these are influential.

A site at the juncture of two major streets with the ability of access on both is ideal. Points of access usually need to be approximately one-quarter to one-half mile back from the intersection. A site which approaches the shape of a square usually provides more flexibility in planning access roads. Also, sufficient area to provide the internal circulation between parking areas on campus (sometimes a loop road) is desirable.

Administrator: How many cars do we need to plan for on our 5,000 F.T.E. campus?

Planner: The parking needs of a community college are somewhat parallel to those of a regional shopping center. Parking spaces required at any one point in time on our campus should range from 60 per cent to 75 per cent of our 5,000 F.T.E. student enrollment, space for 3,000 to 3,750 vehicles. Placing a traffic generator of this magnitude in an area which is already congested should be very carefully considered.

Administrator: Availability of utilities is a most important criterion to consider. It seems to me there are two important aspects to this problem:

1. Availability 2. Cost of extensions.

In addition, there must be many more complex details to consider when dealing with utilities. This is where the professional planner can help.

Planner: That is true. For example the term "availability" is not synonymous with "adequacy." The existing water distribution system or sewer mains can be too limited for long-range campus needs. Calculation of expected sewage flow, water demand and storm drainage flow is required if potential problems are to be anticipated. The expected average daily water demand on your campus, 25,000 gallons per day per 1,000 F.T.E., would be 125,000 gallons daily. At 80 per cent of water demand, our average daily sewage flow would be 100,000 gallons. This is not a very heavy demand, but it must be adequately accommodated.

Administrator: In our district topography and soil conditions are very important. Our deposits of peat and silt vary greatly in area and depth throughout the district. I presume we need a subsurface soil survey to properly judge any potential site. I assume an investigation of subsoil conditions would be a must before our board accepted a gift of land, should we be so fortunate.

Planner: That is correct. The configuration of areas with problems in subsoil conditions can exert a drastic influence on the design and layout of buildings, drives and parking areas. These areas must be closely delineated to determine whether this influence is detrimental to the extent of adversely affecting good campus development. Cost also is involved here if unusual foundation design is required. Analysis can be made even without a total planning study on a particular site.

Topography or change in elevations across the site is also important in the establishment of good drainage. However, slopes of over 10 per cent on the site, if predominant, can mean a good bit of land reforming will be required to gain access for drives and walkways. Flat sites will require extra costs to provide fill and natural drainage, or else an extensive amount of underground storm drains will be required.

Administrator: Most boards and communities have as their ultimate goal an esthetically pleasing campus which will develop nostalgic feelings within its graduates, and one which is the envy of the community college movement. Yet, I have noted that architects and planners have been given a complicated problem when esthetic considerations of the site are left out. I presume this is part of considering emotional environment.

Planner: Yes, it is. Also involved in considering a site from an emotional environment standpoint is the potential inherent in the site to create a strong architectural statement. If a strong physical feature, such as a prominent hill giving outstanding views to and from the site; a river, lake, waterfall or some natural water feature; or a beautiful grove of trees and plant materials is available, it gives the designers a strong influence upon which to add a complimentary architecture. When dealing with a site devoid of this potential, all the character and strength must be derived from the man-made elements, i.e., newly planted trees, and possible earth sculpting. This approach to development will tend to make the most of a site lacking an environment of beauty which stirs the emotions and senses of people.

Administrator: By adjacent land use, I assume we mean the character of surrounding development, zoning, etc. I know this to be important from the standpoint of the college: We want good neighbors and hope to be a good neighbor. Looking at the possibilities of future change in the encompassing area is a must. Is there any way to project what the future of a particular site may be so far as neighbors are concerned?

Planner: The ability to be a good neighbor depends on how well the surrounding area can accommodate a major impact such as a community college of this size. Can the college be integrated into the long-range development plan of the community? This is a very important question for the college to answer. Unless the community planners work with the college and control what goes in "across the street," a college may soon find itself with nothing but a strip development of gas stations, sandwich shops, and record stores for neighbors. Ideally the college would be near such community facilities as a civic center, a hospital, or a large park.

In most cases, such a relationship would be an asset to the college and community. As a general rule, it is almost impossible to locate an available site adjacent to one of these types of developments.

Hazards and nuisance are inherent in various commercial and industrial developments. Although adjoining commercial or industrial neighbors can be very compatible with the junior college, a careful look at them is important. Obviously, locating close

to a factory where noise and air pollution is a problem should be avoided.

Administrator: We have now discussed each of these criteria individually. But it is not proper evaluation of a site, comparable to the Gestalt psychology, in that the configuration of the physical phenomena are so integrated as to constitute a functional unit with the properties not derivable from its parts.

Planner: If this means that a site in the final analysis has to be judged as one unit or as a totality; yes, this is true. A good procedure after evaluating and judging all sites by the criteria just enumerated is to judge the two or three strongest sites as a whole against each other.

Administrator: The question then arises as to the best way to use our eight criteria to select the two or three strongest sites that are available. I have seen a rating scale or arithmetic procedure used before. Do you think this is really helpful?

Planner: As an aid to organizing our system of analysis, I believe the rating scale has definite merit. To keep such a system relatively simple, however, I would suggest that no attempt be made to weigh one criterion above another, but that we judge each individually against a scale of, say, one to ten. In such a rating procedure, the scale could be thought of in the following ranges:

Scale

Scores	
0 - 2	very poor, almost unacceptable
3 - 4	below average
5	average
6 - 8	above average-very good
9 -10	excellent

A perfect score for a site would be 80 on the rating scale. A site judged as average on all criteria would score 40. Most sites receiving serious consideration would probably have scores in the 50-70 range. Two circular examples of one way to graphically express this rating method are indicated below:

Administrator: After such a process of scoring, I presume we could then select the strongest two or three sites and judge them against each other.

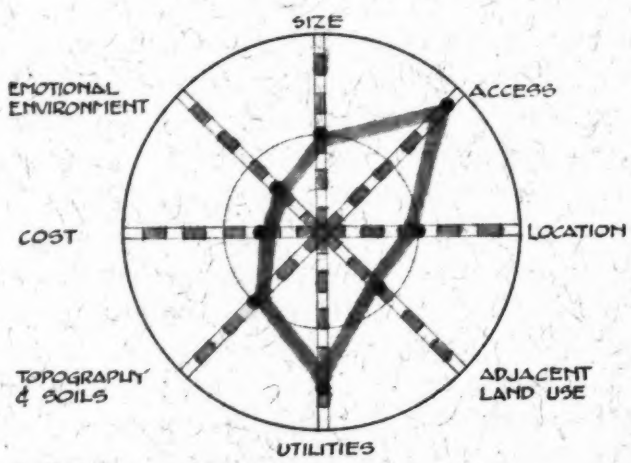
Planner: Yes, it becomes a matter of looking at the pattern of scores. The selection might be so clear-cut that individual criterion would not need to be considered. Yet, it could be almost a dead heat between two sites, and then cost, area or some special asset or liability would help the board or selection committee arrive at a consensus and choose between the two.

Administrator: If my notes are correct, in outline form, we can plan to act as follows:

1. Establish the site selection team—usually the board with a committee chosen to analyze all available sites considered worthy of investigation and report on their findings to the team.
2. Develop a report to include these points:
   a. Possible sites
   b. Criteria established and defined
   c. Classification of sites (urban or suburban)
   d. Analysis of each site using eight criteria
   e. Rating, or scoring, using a scale of one to ten for each criterion
   f. Selection of the strongest contenders and a comparison between them, considering each site as a whole.

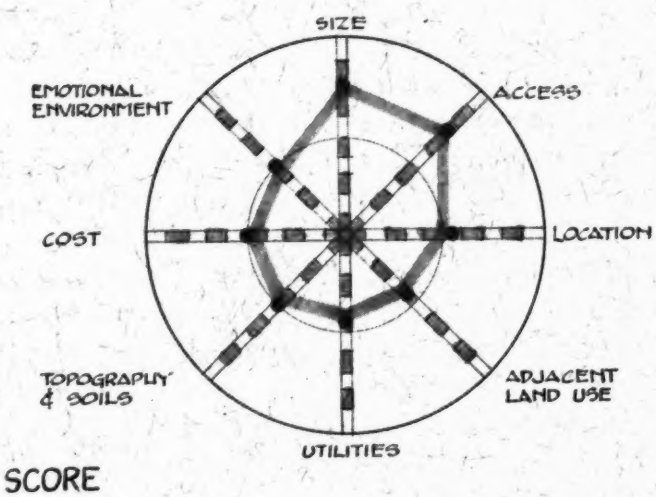
Planner: That ought to do it. By the way, make sure *our* site has some nice big trees, a gentle roll with a knoll or two, a small fish pond, and. . . . Well, there is no harm in dreaming.

A



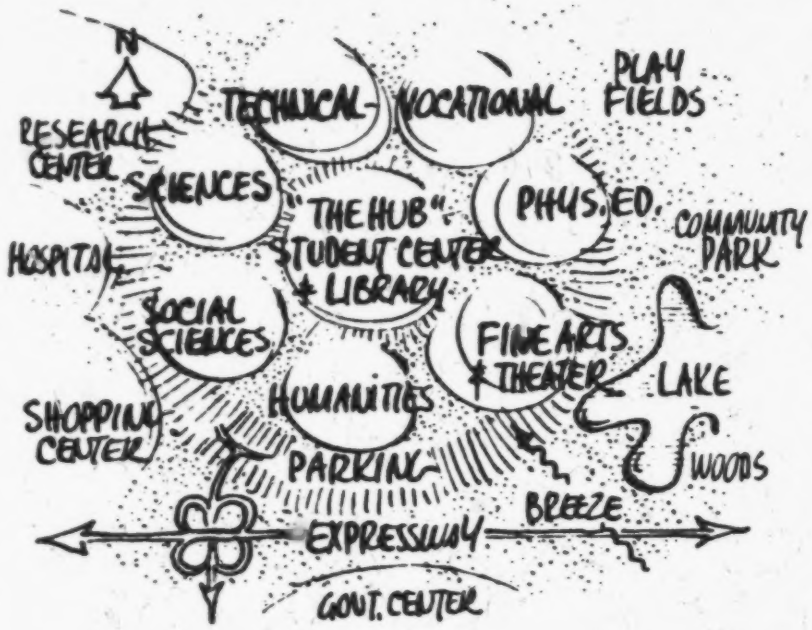
TOTAL SCORE
43

B



TOTAL SCORE
46

ANALYZING MASTER PLAN INFLUENCES



By F. Philip Brotherton and Charles William Burbaker

WHY IS THE GOOD COLLEGE MASTER PLAN UNIQUE ?

It is unique because 1) the educational programs it serves is unique, since each individual community has distinctive needs, and 2) the nature of its site is unique, since no two properties have similar geography, climate, access, neighbors, etc.

HOW IS IT CREATED ?

The master plan develops first from an analysis of need, site, growth and finance, etc., and then from creative synthesis wherein the separate elements are combined to create a unified whole (a "master plan") which will then guide future development of the college.

WHERE DOES PLANNING BEGIN ?

Planning begins with a detailed inventory of facts, conditions, resources, needs, and influences which will provide the planners (board, educators, architects) with a firm foundation for the creative planning process.

WHAT INFLUENCES AFFECT THE MASTER PLAN ?

The master plan is influenced by many factors, as educational program, scheduling, growth and finance, technology, geography, climate, the automobile and other transportation, neighborhood, other community needs, and planning beyond the site.

ON THE FOLLOWING 5 PAGES ...

... we remind you how the varying facts of these influences will strongly affect the master plan, and therefore, the form of the college.

THE INFLUENCE OF PROGRAM

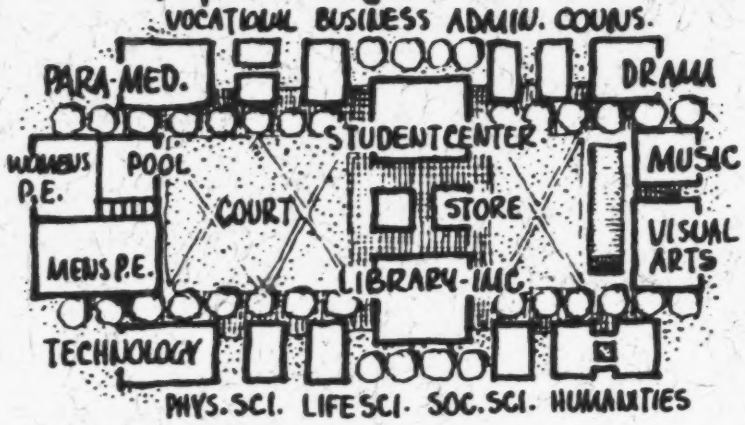
Two different programs generate needs for two different kinds of space. Contrast— 1) departmental buildings, and 2) malleable space.

assume—

- a conventional program with classes of 30 which meet regularly.
- need for conventional classrooms, laboratories, shops, offices, etc.

a possible design direction—

- departmental buildings, each serving a specific subject

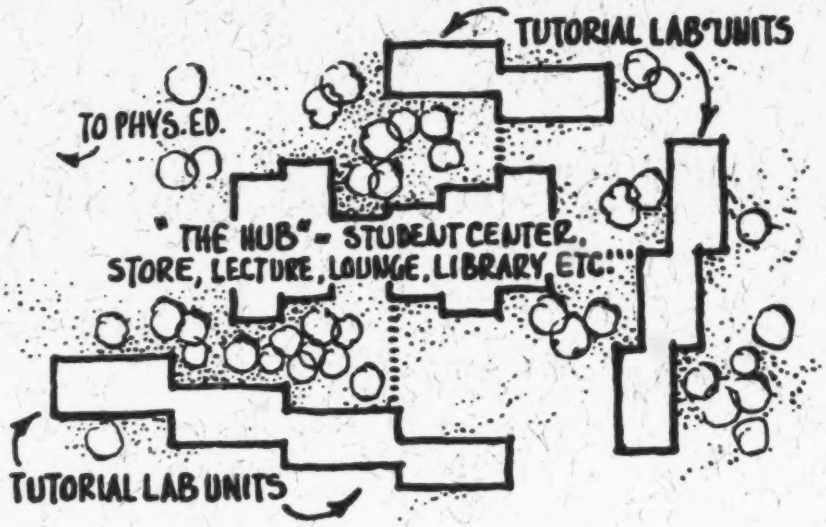


assume—

- a unique, changing program, emphasizing individual study, and utilizing the tutorial system.
- need for malleable learning space to accomodate an evolving program.

a possible design direction—

- flexible column-free space in "tutorial lab units" which will change within, in future years.



THE INFLUENCE OF SCHEDULING

assume—

- a conventional schedule with all classes "passing" each hour, simultaneously.
- during classes, very few students move about the campus.

a possible design direction—

- low, walk-up buildings are most appropriate, because traffic is concentrated at hourly intervals.

assume—

- a smaller module of time, with different lengths of time for each activity, so that some students move around the campus at all times.

a possible design direction—

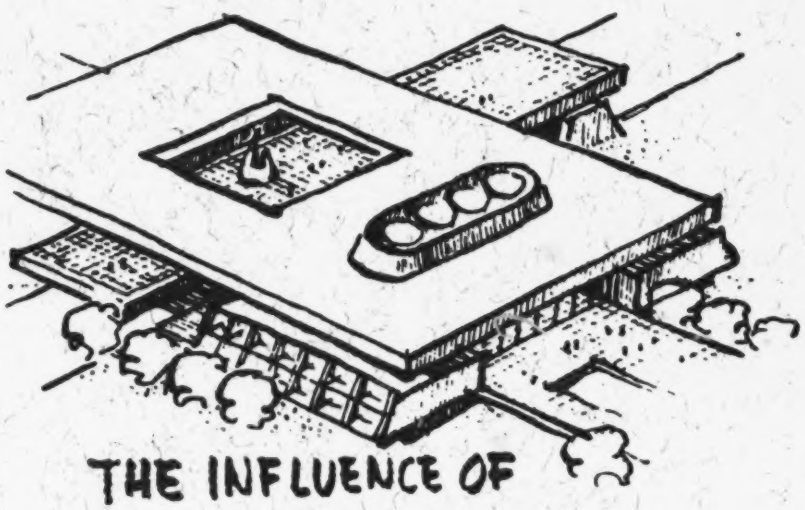
- the high-rise building is possible because elevator traffic is spread.

THE INFLUENCE OF GROWTH & FINANCE

Some colleges have been created complete in a single stage, ...but most are constructed in many stages.

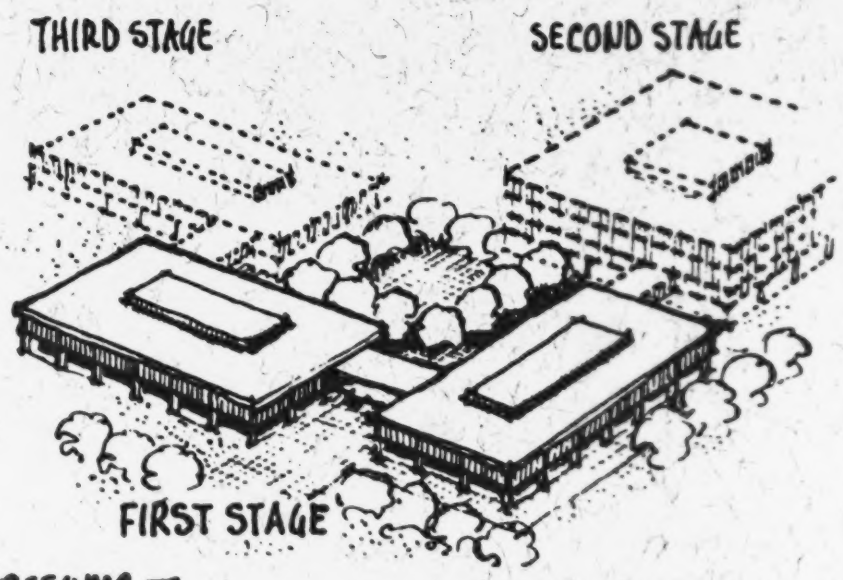
assume –
- creation of a total college in a single building stage.
- adequate capital construction funds available for complete campus.

a possible design direction –
- a large, unified "mega-structure".



assume –
- college to begin on a small scale and grow continuously over many years.
- limited capital construction funds available for first and successive stages.

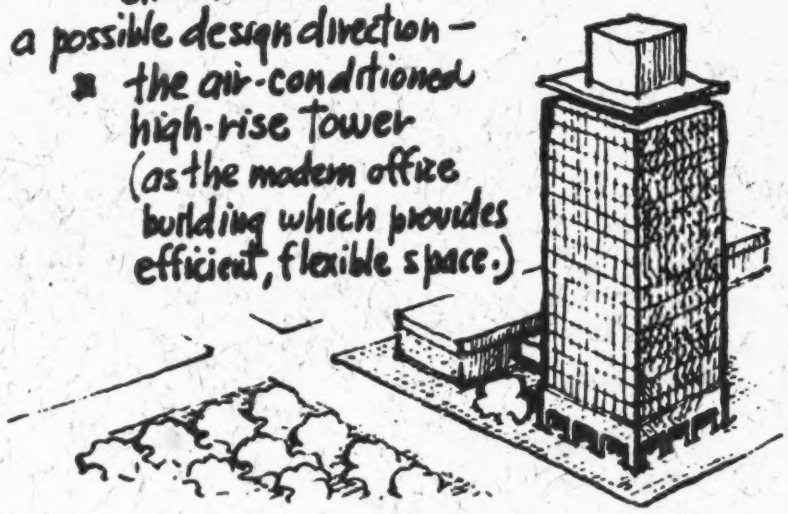
a possible design direction –
- a series of linked units, each small, permitting construction in many stages.



THE INFLUENCE OF TECHNOLOGY

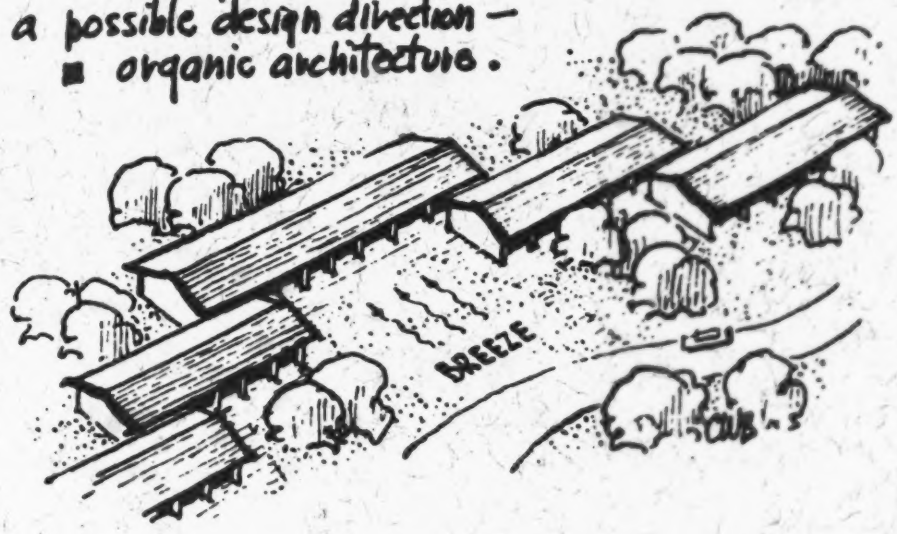
assume –
- highly sophisticated building materials and building methods (= "city".)
- an intense climate that demands climate control.

a possible design direction –
- the air-conditioned high-rise tower (as the modern office building which provides efficient, flexible space.)



assume –
- modest building materials and methods, due to economic necessity or local custom.
- an agreeable climate permitting use of natural forces for ventilating, cooling, heating, and lighting.

a possible design direction –
- organic architecture.

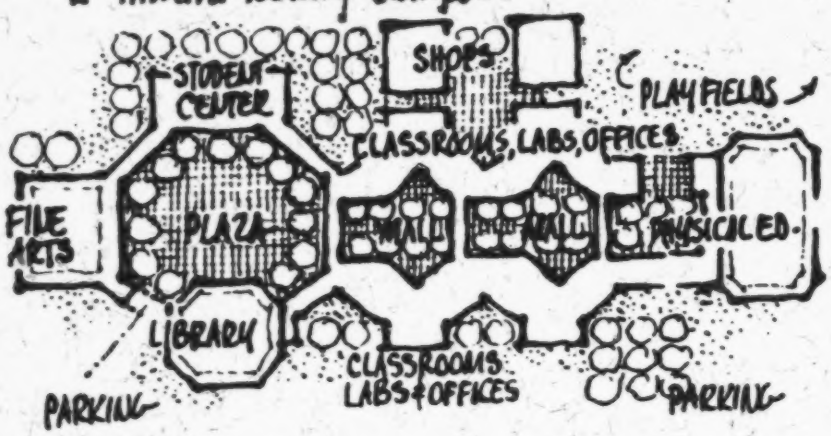


THE INFLUENCE OF GEOGRAPHY

Contrast two kinds of sites =
- if the site is not naturally well endowed, man must create his own environment,
- but some sites provide the environment.

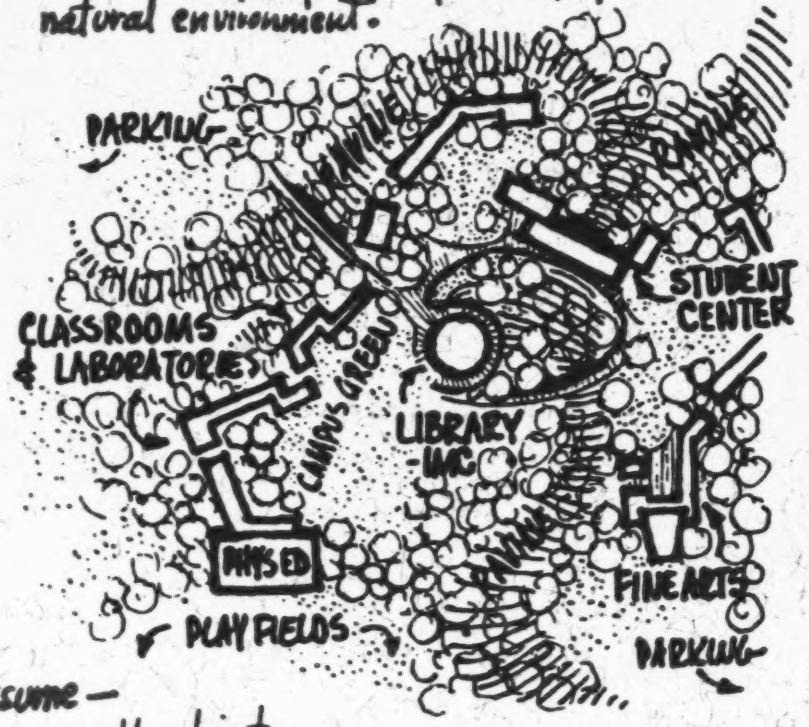
assume —
- flat treeless land lacking character.

a possible design direction —
- a formal master plan with buildings related to a central mall, courts.
- inward-looking campus.



assume —
- rolling wooded land with strong character.

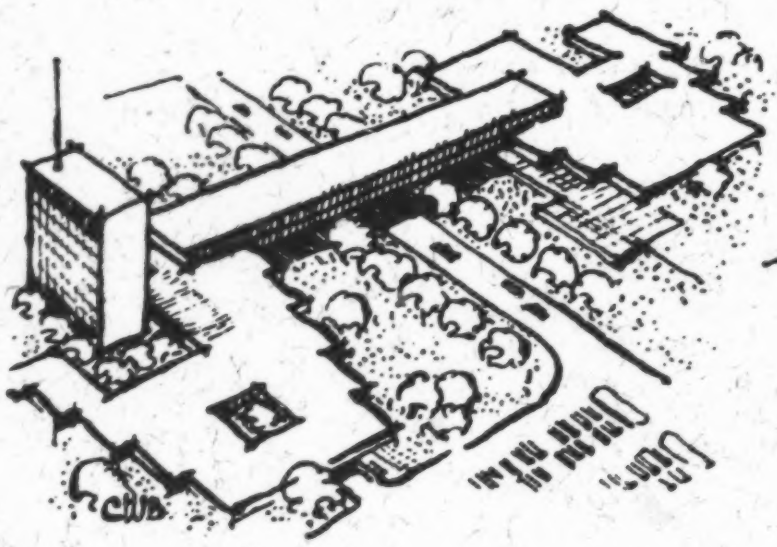
a possible design direction —
- an informal master plan with buildings scattered in the woods.
- outward-looking buildings enjoying the natural environment.



THE INFLUENCE OF CLIMATE

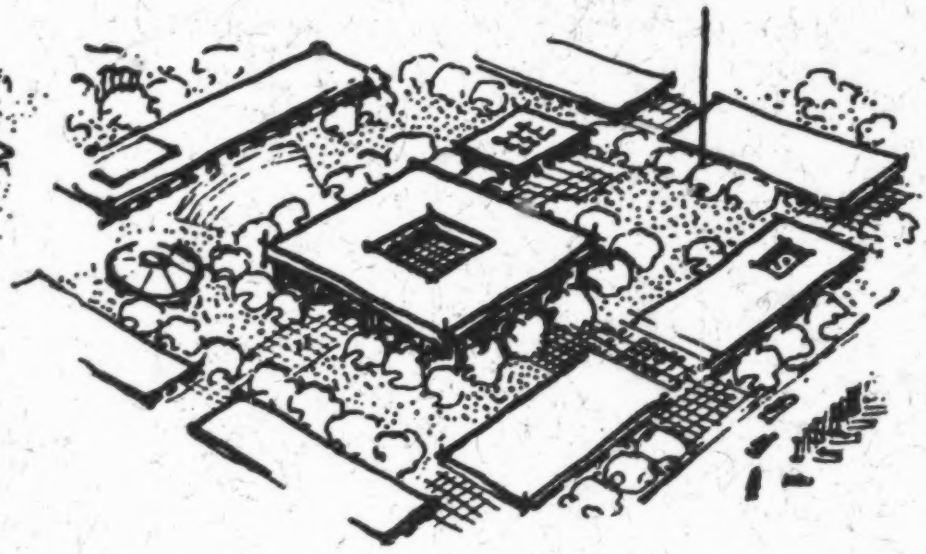
assume —
- vigorous climate.
- outdoor activity often discouraging.

a possible design direction —
- "continuous building" master plan.
- all circulation sheltered.



assume —
- gentle climate.
- outdoor activity welcomed.

a possible design direction —
- "independent structures" master plan.
- outdoor circulation between units.



THE INFLUENCE OF
THE AUTOMOBILE

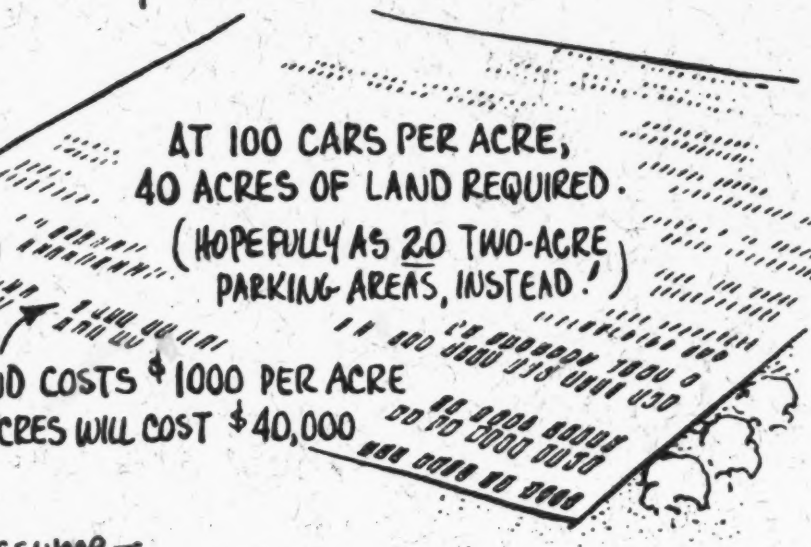
The master plan must consider, and solve, the bothersome, and growing "automobile problem."
(How can any college not be interested in expressway and rapid transit design?)

assume –
- inner city urban location
- good rapid transit available
- expensive, limited land

a possible design direction –
- provide minimum parking in multi-deck garage.
- a 5000 student urban college may be able to provide only 400 parking spaces.

assume –
- rural or suburban location
- no public transportation
- low-cost, adequate land

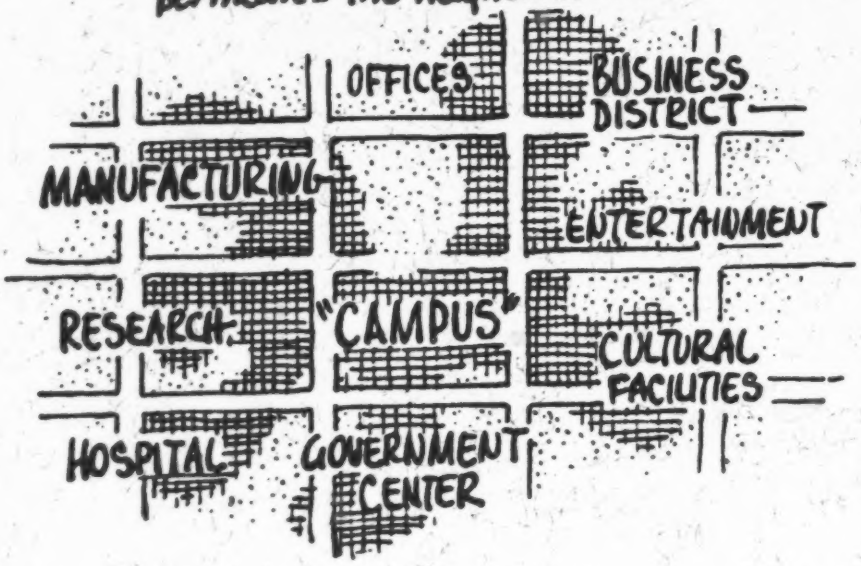
a possible design direction –
- provide ground-level parking for all students, Teachers, staff, & visitors.
- a 5000 student rural or suburban college may require 4000 parking spaces.


AT 100 CARS PER ACRE,
40 ACRES OF LAND REQUIRED.
(HOPEFULLY AS 20 TWO-ACRE PARKING AREAS, INSTEAD!)
IF LAND COSTS $1000 PER ACRE
40 ACRES WILL COST $40,000

THE INFLUENCE OF
NEIGHBORHOOD

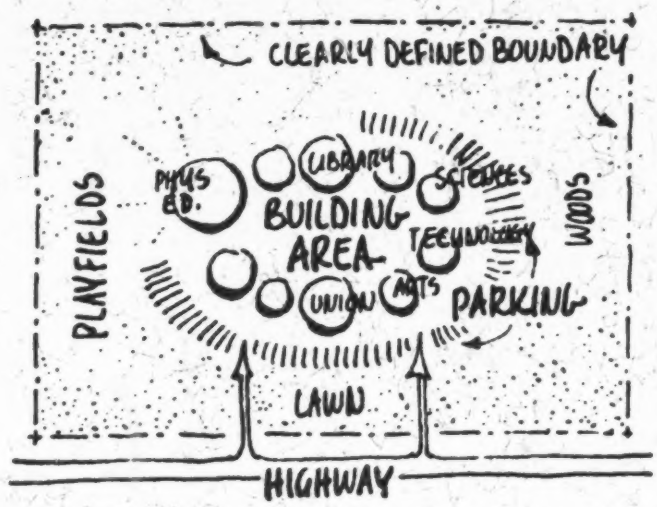
assume –
- urban location
- many diverse neighbors which influence the campus and can be influenced by it.

a possible design direction –
- "uncontained" campus permeates the neighborhood.



assume –
- rural or suburban location
- neighbors not related to the college

a possible design direction –
- "contained" campus is complete in itself.



THE INFLUENCE OF OTHER COMMUNITY NEEDS

"Tomorrow's school will be the center of community life ..... a shopping center of human services."
— Lyndon Baines Johnson at AASA convention, 1966

assume —
- comfortable suburban area or community already supplied with good cultural facilities.
- little need for additional adult education facilities.

a possible design direction —
- an academic campus with the character of a "college."

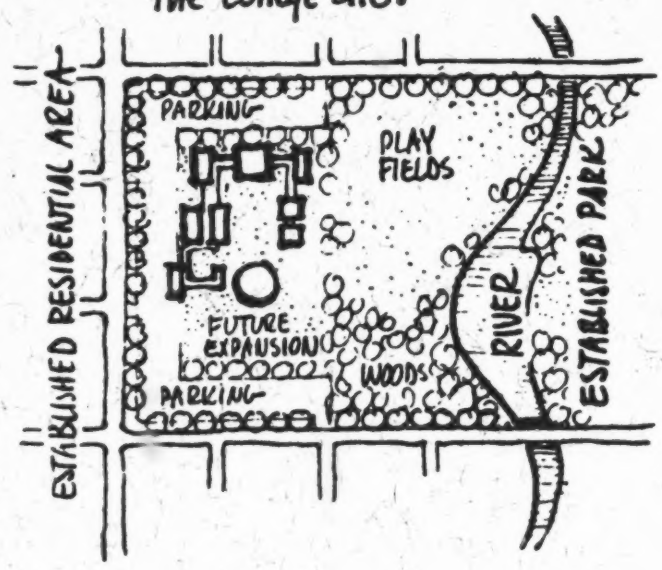
assume —
- uncomfortable inner-city area lacking cultural facilities.
- need for adult education opportunity and facilities.

a possible design direction —
- an educational and cultural center that influences the entire life of the area.

THE INFLUENCE OF PLANNING BEYOND THE SITE

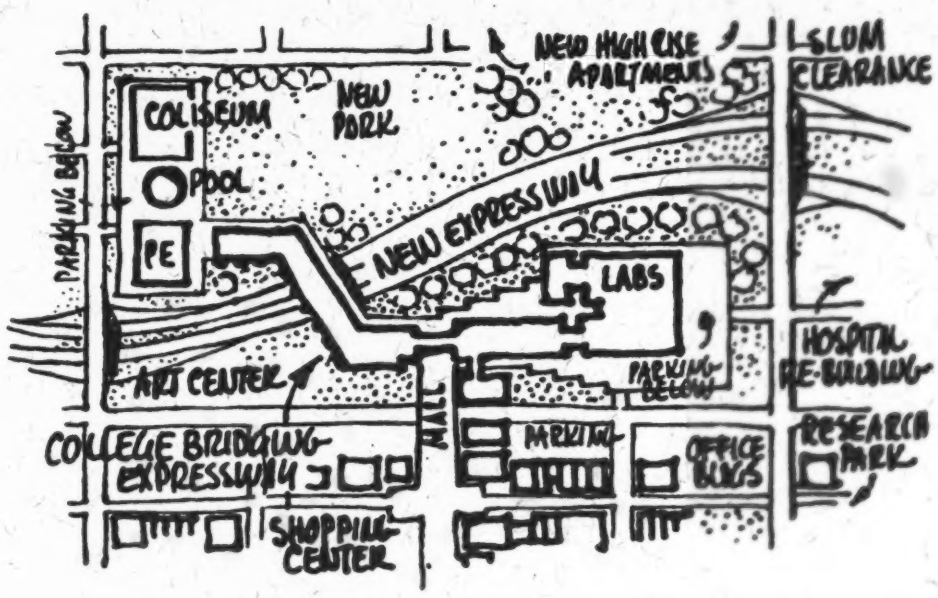
assume —
- an established, "finished" area.
- expect little change in the neighborhood.

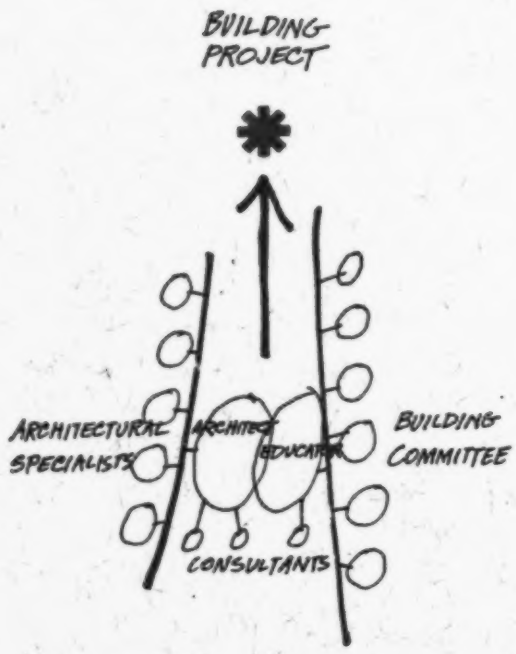
a possible design direction —
- limit interest to planning the college site.



assume —
- a developing and changing area where many other programs will affect the college.

a possible design direction —
- take an active interest in urban renewal, expressways, mass transit, zoning, etc.





Programing requires the joint effort of two kinds of teams. Each team must designate a person with complete authority to make decisions.

ARCHITECTURAL PROGRAMING

Important Steps Before Design Can Begin

By William M. Pena and Leroy V. Good

Architectural programing may well be the most important phase in the design of a junior college. But important as it is, there is much confusion in the meaning of the term and in the responsibilities involved in the programing process.

What do we mean when we say "architectural programing?" At the outset we mean the analysis and determination of the needs, concepts, and conditions of a project which should influence its design.

And yet programing is really more than a definition of the requirements—surely more than a detailed list of spaces. Programing is problem seeking: design is problem solving. Programing is the diagnostic process which precedes the prescription of a solution.

The term "programing" is used to mean "architectural programing" and should not be confused with such terms as "educational program" (which is the result of educational planning) and "computer programing" (which may be involved as an aid in the programing process).

If there seems to be confusion in terms, there is even more confusion in responsibilities in the programing process. An architect may say, "It's the educator's responsibility to give me the educational program." Another architect may want to leave the educator completely out of the process under the presumption that he knows more than his client about education.

Incredible as it may seem, there is the educator who may tell his architect, "I want to see sketches for a college for 5,000 students"—avoiding the educational planning portion of the process. While another may give his architect a voluminous set of educational specifications which includes all kinds of architectural details such as the heights of window sills and chalkboard rails.

A Joint Effort

It should be understood that programing requires the joint effort of two kinds of teams: an educational team and an architectural team. It is important however that each team designates a responsible person with complete authority to make decisions. Only in this way can communication between teams be effective.

The educational team is primarily responsible for the educational planning which usually culminates in a set of educational specifications. The architectural team is responsible for the site and space analyses. Together, the teams analyze the facts and identify the educational-architectural concepts for the building. Together they must balance the space budget with the cost budget.

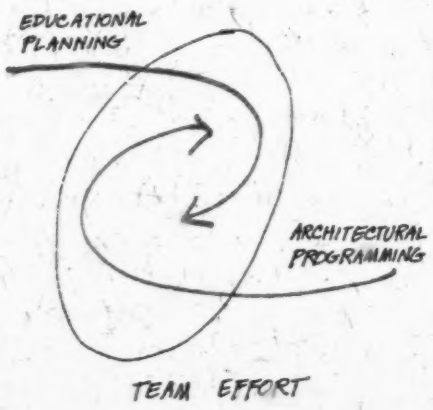
The approach of the programing process calls for cooperation between the planning teams. It requires analysis of data to determine needs and recognize superfluous wants, and it demands creativity in seeking the uniqueness of the project which can be expressed in the facility.

High Degree of Communication

Techniques which achieve a high degree of communication are a must in the programing process. Start by assuming that the typewritten page does not communicate as easily as a diagram. This is why architects look for "bubble" diagrams to explain relationships of elements in the educational specifications; try as much as possible to diagram every pertinent fact, every concept; rely on the written word only as a last resort and then reduce each thought to a succinct statement. Analysis cards, each presenting only one thought, one fact, or one con-

cept, can be used effectively to communicate between team members. This documentation is the responsibility of the architect—not only to demonstrate that he understands the information but also to provide feedback to the educator.

After writing a thick set of educational specifications some educators have been disappointed that the architect used only a small portion of it as the basis for the schematic design. They should understand that the designer through a schematic design intends to solve the big overall problems first and that through design development he intends to solve progressively more detailed problems. This is why the programing process itself should be organized to provide the appropriate information at each design phase.



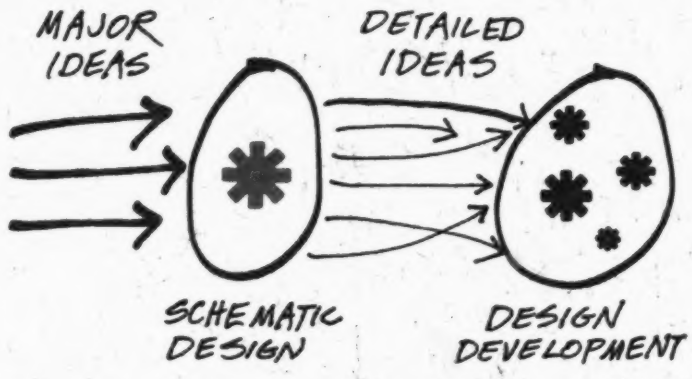
Together the teams analyze the facts and identify the educational-architectural concepts for the building.

The first phase of programing must discriminate between relevant facts and unimportant details, between the overall basic concepts and the small features. The second phase of programing then must provide the detailed information for the development and refinement of the design. The flow of information continues, but the significant statements that emerged in the first phase always remain distinct from the second phase details.

Steps to Define the Problem

Because the programing process may appear to be haphazard, many regard it as a mysteriously creative process. Nothing could be further from the truth. It requires more perspiration than inspiration. Programing is a step-by-step analytical procedure. The sequence of steps may differ in this scientific procedure, but the steps themselves form an orderly framework for the documentation of information coming from many sources and directions. The following steps lead to the statement of the problem:

1. Establish aims
2. Collect, organize, and analyze facts
3. Uncover and develop concepts
4. Determine needs
5. State the problem.



Educators should understand that the designer through a schematic design intends to solve the big overall problems first and that through design development he intends to solve progressively more detailed problems.

Let us examine each of the five steps.

1. *Establish aims:* Each junior college has particular objectives or goals, and policies for achieving those goals. The team must identify and document goals because they may provide inspiration for the designer. Goals may be stated in terms of the educational program, the site, the budget, and the time element. Usually goals will be discussed at the beginning of programing when the team has the total project in mind, but unless these goals are captured at the moment and documented, they may be lost in the avalanche of details which follows. Brief and concise statements are most useful.

2. *Collect, organize, and analyze facts:* Facts by themselves tell us little. Facts must be organized and analyzed with the project conditions in mind before they reveal their meaning. It is difficult to separate facts from ideas because ideas emerge from analysis of facts within the context of a problem.

a. Educational program: The educational specifications provide facts regarding the numbers of students, faculty, and staff; how the number and kinds of spaces are to be determined; what activities determine the size of spaces; and how stated requirements affect the computations. It has been said that architects need not be concerned with the determination of space requirements. In practice, the architect often finds himself working in a team in which he has to know how to determine space requirements. Architects are beginning to use the computer to good advantage in this respect. Inevitably the architect will be involved in the separation of wants from needs (fourth step) and he must be able to know that the needs were computed on a logical basis.

b. Site: Analysis of the physical, legal, and spiritual aspects of the site needs to be made during the programing process because the site is one of the great form-givers in design. Topography, soil conditions, and views are key variables. Off-site and on-

site traffic circulation, utilities, and details of local climatic conditions are additional factors. Prevailing winds, sun angles, temperature, precipitation and snow, all bear on the schematic design. Investigation on the limitations and possibilities of the site may be based on codes, zoning laws, and other legal restrictions.

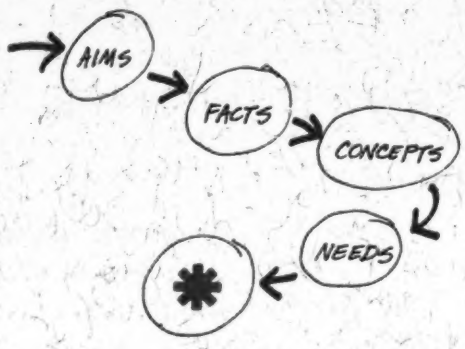
c. Costs: Facts must be collected regarding local construction costs including location and escalation factors. Cost figures must assume a quality of construction appropriate for a junior college considering maintenance and long-term costs. This is the time to be realistic about costs and to be thorough in anticipating all cost components in the initial budget —including building cost, fixed and movable equipment, site development, fees and contingencies.

d. Time: This element may affect the program, the site and costs. With time, the educational program will change; the college will grow. With time, costs will more than likely rise and must be considered in establishing a schedule for construction phases. With time, the site may be expanded by new acquisitions. The test of time must be applied to find the possible implications. The future merits consideration while we have to build in the present, but the past need not be ignored. Tradition or the lack of it should be considered.

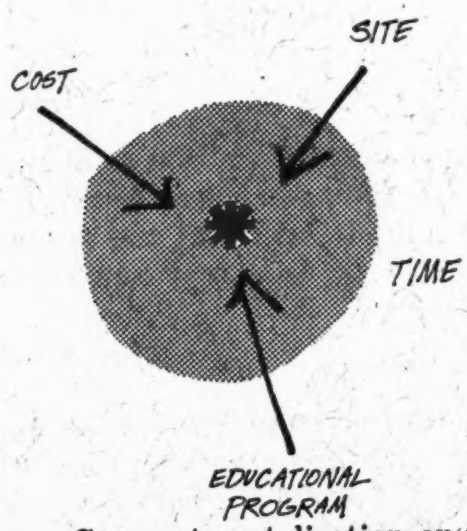
3. *Uncover and develop concepts.* While it is difficult to separate facts from concepts, because they depend upon each other, the educational program should be examined to allow the major educational-architectural concepts to rise to the surface. The recurring concepts listed below are shown only as examples. Numerous others can be used.

a. Flexibility: Enrollment growth may require a physical plant which can be expanded. As programs change, spaces may have to change to serve different functions, therefore requiring convertibility. A space may have to accommodate more than one type of activity and demand versatility of use.

b. Centralized or decentralized services: Is the library, for example, a single space or structure, or are there smaller libraries within each academic discipline? Does one cafeteria provide all of the dining services, or are there snack bars or other small dining areas in different campus locations?



Programing is a step-by-step analytical procedure. The steps lead to the statement of the problem.



With time the educational program will change; the college will grow.

c. Compartmentalization or integration of space: The plan may consist of many classroom spaces grouped by discipline, or it may be mostly carrels in larger open spaces without regard to particular discipline.

d. Hierarchy. Which elements of the facility should be given greater importance by means of location—for example, a centrally located library? Should elements be given equal or unequal social value by location—for example, the location of academic and vocational-technical facilities?

4. *Determine needs.* One of the most important steps in programing is to balance the space budget with the cost budget. There is no question about it; if the needs are not determined during the programming phase, the result will be a vague program and an unbalanced budget—both of which form a shaky basis for design.

A valuable communication technique involves the use of "brown sheets"—the graphic representation of the space requirements drawn on brown wrapping paper. This simple technique is particularly effective in working with faculty committees because the relative sizes and number of spaces help the committee grasp their significance quickly. Changes in the allocation of space can then be made for all to see. At this point it becomes apparent whether or not the funds are sufficient to meet the needs.

Estimated costs for the initial budget must necessarily be based on a cost per gross square foot for the building cost, and on percentages of the building cost for most of the other line items. These percentages stem from the architect's experience tempered by the local situation. Realistic estimates made now may mean a successful bid letting later on.

5. *State the problem.* The goal of the programing process is to state clearly the major problems which the design must solve. To find the uniqueness and the essence of the total problem we must review all the information documented, starting with the aims and proceeding to facts, concepts, and needs, and then determine the most important statements which can be made regarding the problem. There should be a minimum of four statements or premises for design: one each concerning the program, the site, the budget, and the time element.

If it is true, as psychologists tell us, that a designer can handle seven facts (plus or minus two) at a time, then it is important to arrive at the essence and uniqueness of the problem in that number of statements or premises.

Conclusion

We want to stress the cooperative nature of the process. Educators and architects working together can contribute more than the total of what each could achieve working separately.

To be effective the team concept requires a high degree of communication. A good idea cannot be evaluated unless it can be expressed clearly. Programing is a two-phase process which provides the appropriate information for the two-phase process—schematic design and design development. Schematic design stems from major ideas and facts which should not be diluted by the flood of details to follow in the second phase.

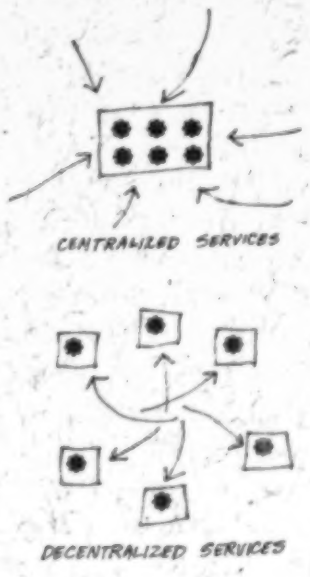
Programing is a step-by-step procedure. Rather than summarize the process it would seem best to conclude with a listing of the goals for programing. What do we hope to achieve through the process? Perhaps we can do a better job of it if we know what we are trying to accomplish.

General Goals

To identify and understand the problems. With the problem-solving approach to design, programing is problem seeking.

To provide a sound basis for responsible design. "Responsible" is used here to mean responding to the architectural program as well as one on which we can rely. It is difficult to respond to a vague or faulty program and still come up with a reliable design.

To find the uniqueness of a project. Design solutions can have a great variety because each project involves a different educational program, a different site and a different cost budget.



The educational program should be examined to allow the major educational-architectural concepts to rise to the surface.

To boil down the architectural program to its essence. A program can be very complex, so it is necessary to seek out a manageable number of essential elements.

To discriminate between the important form-givers and the less important details. While the flow of detailed information must not be stopped, constant effort must be made to delineate the most pertinent factors. The process may take two steps: The first step seeks form-givers for the conceptual design; the second step can provide the details for design development. By that time, the flood of details will not obscure what is really important in planning.

To establish design objectives. The identification of major goals and big problems provides a direction for design.

To uncover sources for inspiration. While a mere listing of space requirements is no source for inspiration, every project has the potential ingredients in the educational program, land, and cost to stir the imagination.

To establish the limitations and explore the possibilities. Establish the realities of a project and, where there is leeway, explore for alternatives.

To discover the real meaning of facts. The collection of facts is easy enough, but facts must be organized and analyzed to be useful.

Education:

To uncover and develop strong concepts. The trick is to recognize a concept when one is in the offing.

To establish the functional requirements. This is, perhaps, the most obvious goal, but programing must probe beyond function.

Site:

To determine the legal, physical, and spiritual influence. Every site is replete with form-giving characteristics. The legal and physical may be obvious. The spiritual ones involving tradition, ecology, and respect of neighbors are more subtle.

To determine the difference between wants and needs. Wants refer to preconceived solutions or desires not founded on the basic problems. Needs refer to the realistic requirements of space to meet functions, which recognize limitations of budget.

To initiate cost control. Agreement must be reached on a realistic initial budget at this time. An optimistic budget can only result in a disappointing bid letting.

Operational:

To establish communications among the team members. Team members in action do not have time to read. Every item of information should be documented graphically for quick reference.

By Clifford G. Erickson and Ernest J. Kump

Campus Design and Learning Environment

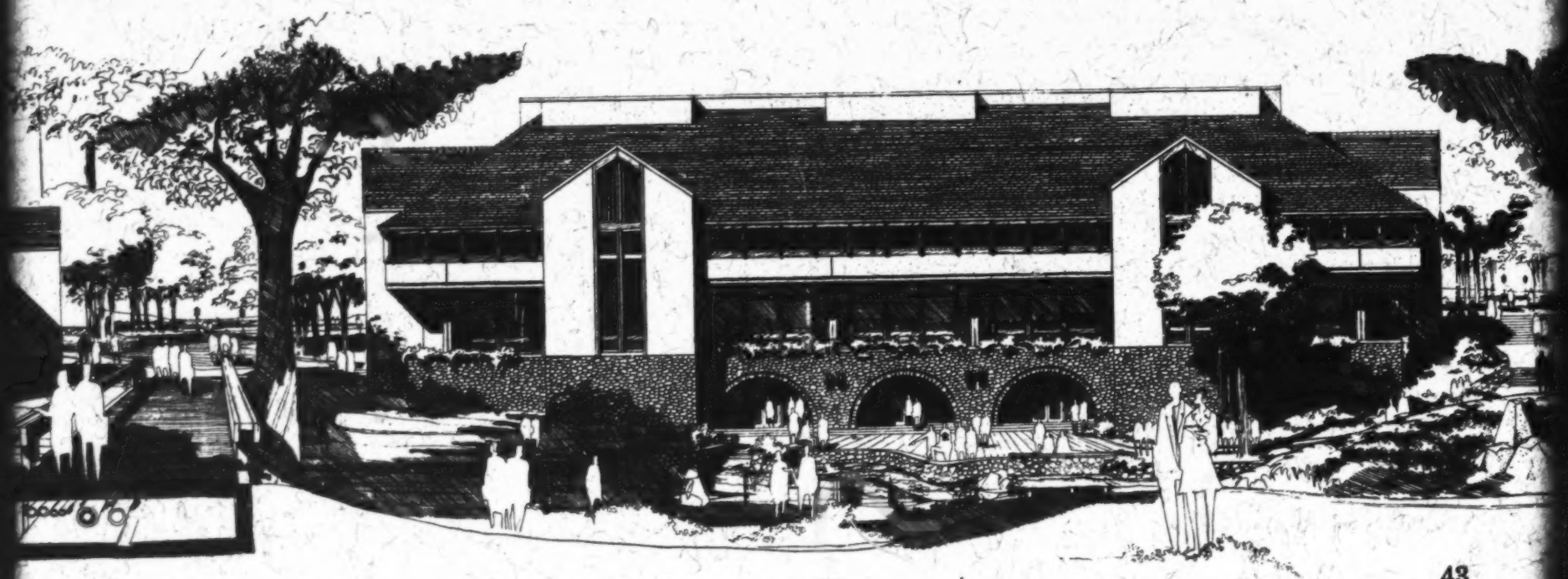
The Roots and Traditions of the Community Are First Considerations in the Design of a Junior College Campus

The junior college campus is not a package for people nor a monument for posterity. It is a dynamic learning environment. Just as a cathedral induces reverence and worship, so does creative college architecture have a profound effect on learning.

Campus design is all-embracing because a junior college is a microcosm of man's total environmental and social needs. The college campus must provide for the gathering of groups of many sizes and purposes. In addition to classes, lectures, and seminars, it must accommodate dining, recreation, research, office, living, library, maintenance, art, drama, vocational work, and in some cases, worship. Virtually every type of building and space is included on the junior college campus. All will affect, for good or ill, the total learning environment.

The complete conception of a college plant involves profound and intense collaborative effort of many minds, through a carefully ordered sequence of steps, beginning with basic premises and unfolding through successively more specific development phases until ever detail is determined. The architect and the educator must recognize that campus design encompasses every physical element of the college—buildings, grounds, circulation, landscaping, interior

Rock Valley College (Illinois) library elevation.



furnishings, and equipment. All of these should be meticulously defined, organized, and interrelated, before the commitment to construction drawings for any portion of the architectural solution can be undertaken.

Philosophy, Objectives, and Specifications

The first and perhaps most important key to a successful architectural solution is a clear understanding of the philosophy and objectives of the educational program. Educational specifications are too often limited to a very brief statement of college organization, enrollment projections, and a detailed itemizing of such items as room spaces, lineal feet of chalkboard, the height and number of toilet fixtures, and so on. Though these technical facts are necessary, the architect needs to know much more about the spirit and purpose of the institution, as well as about effective relationships and functions sought within it, to design the desired learning environment.

To develop a truly meaningful architectural program or educational specification requires a profound and intense dialogue between architects, educators, community, and, ideally, students. Such a dialogue is a highly creative exercise, which will be expressed in verbal, written, and graphic terms. It will be developed, molded, and refined in an orderly unfolding throughout the design process. It should express the quality or nature, as well as the mechanism, of every human experience and activity that is envisioned for all segments of the college community. Effectively documented, it will inspire sensitive response in the actual design of the college, and provide an invaluable basis for testing the rightness of design proposals, from fundamental concept down to the smallest detail.

Function and Feeling

Learning spaces can create certain moods or feelings which can be conducive or detrimental. The true purpose of architecture in the junior college is to create a physical environment, an expression of feeling, which will evoke an optimum psychic response in students and faculty alike. It is axiomatic that a building should function properly, should be efficient and economical, and should provide the proper rooms or spaces, fixed or flexible, correctly shaped and equipped. This is basic and is made possible by today's great technological skills. But, we can also expect the form and manner in which the physical parts and spaces are arranged to create a feeling which emotionally bespeaks the purpose of the building, and the traditions, values, and character of the neighborhood or region in which the college is constructed.

Paraphrasing architect Louis Sullivan: "In architecture form follows function but to this we must add fitness and feeling."

Through sensitive and creative architecture the physical environment of the campus can be made to convey limitless expressions of mood and feeling. Spaces can be exciting, serene, sophisticated, dignified, informal, or inspiring. In fact, the architect can create and duplicate for human experience almost any emotional quality that the other arts such as drama, music, or literature can convey.

Technology and Human Values

A tragically large proportion of the buildings being built today are aesthetically lifeless machines—machines for commerce, living, learning, and worship. Community college campuses can become remarkably efficient machines but their design will be faceless, impersonal, and devoid of individuality of expression if human values and recognition of the roots and traditions of their respective community environments are forgotten. Many schools and colleges are looking more and more like clinics, laboratories, or light industrial plants. It's becoming ever more difficult to know from their appearance just what buildings are.

Educators today are trying to utilize the tremendous current developments in science and technology to bring about improvements over the traditional ways of organizing pupils, teachers, and learning materials and to enhance the efficiency and quality of learning. These new educational resources include television, the computer, tape recorder technology, push-button responder equipment, and a host of other mechanical and electronic devices. This new emphasis on technology in the educational process may contribute to the tendency toward sterile and antiseptic design solutions.

However, junior college campuses can embrace the latest in scientific advances, technology, and instructional methods and, at the same time, express a learning environment which is meaningful in terms of human values—that respond to the heart as well as to the brain of the student. College buildings can be functionally efficient, technologically modern, and structurally flexible and adaptable without having to resemble antiseptic clinics or factories, as many educators, as well as architects, seem to believe. If a visitor says, "Well, the college has a fine educational program and a well-equipped plant, but it just doesn't appeal to me!" there is less to the campus than meets the eye, or perhaps the buildings are more cosmetic than aesthetic.

For a college campus to be wholly successful architecturally, it must achieve not only a sound functional solution but also a sensitive, valid expres-

sion of its purpose and environment as well—and blend these so subtly that in experiencing it, one cannot distinguish between functional and emotional concerns in the total quality.

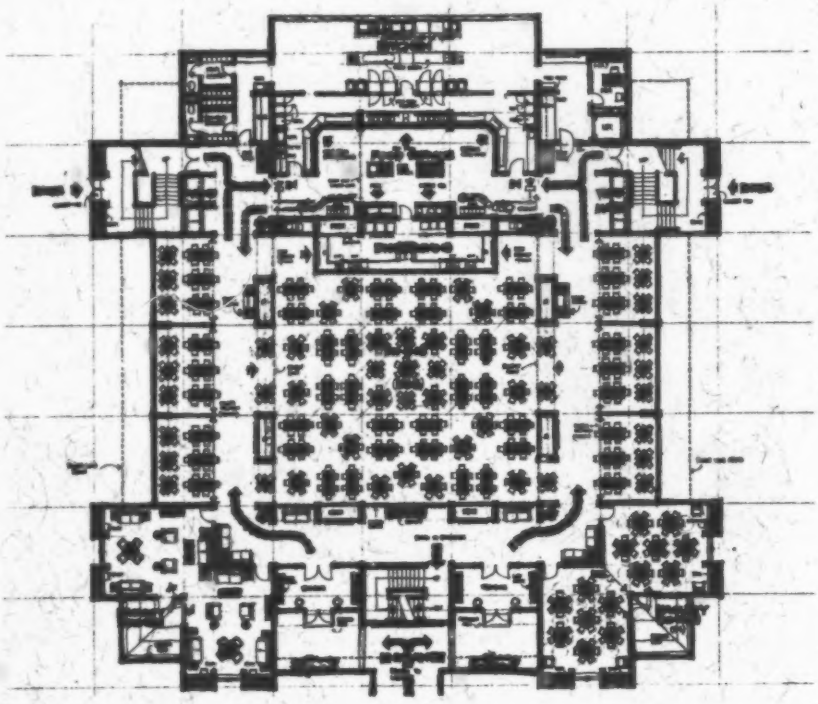
To add Sullivan's "fitness and feeling" we must not consider that what is available to us through architectural expression is less real and important than the utilitarian function, or that it need add to capital or operational costs, for the interesting fact is that architectural excellence often costs little or nothing—the only prerequisites being the owner's recognition of its importance, and a creative architect. This is borne out in actual experience, since many universally admired, award-winning projects have unit costs of construction which compare favorably with those of mediocre designs.

Now we turn our attention to a more detailed examination of how the educator-architect team can achieve the dual goals of functional excellence and inspiring expression. Among the many aspects of the interrelationship between function and feeling, four of considerable importance are: scale, order, materials, and style.

Factor 1—Scale

Scale is one of the most influential determinants in architectural quality. Consider the problem of planning a community college campus to accommodate 8,000 day and evening students. A complex of this size threatens by its intrinsic nature to have a degree of impersonality that adversely affects students, faculty, and educational efficiency alike. The very number of students and faculty poses a challenge to create a milieu that will manifest a recognition of humanity and individual importance, so essential to an atmosphere conducive to successful education. The massing of the buildings, the proportions of their parts, and the relative expanses of exterior and interior spaces will have a profound effect on this learning environment. The scale factor with its bearing on educational philosophy places an obligation on the educator to keep all values in balance as he participates in the dialogue with the architect concerning scale-oriented aspects of the educational format, such as class size modules, densities, and interrelationships of functional groupings, circulation arteries, and so on.

A key drawing of the Rock Valley College student center.



On a campus for 8,000 students, a multistory tower for faculty offices would create a social distance between faculty members and students. A dispersion of faculty offices throughout the campus and the placing of these offices near instructional and study facilities will, on the other hand, enhance faculty-student relationships. In the same way, study spaces distributed through the campus can offset the monolithic effect of a huge library-learning materials center to which all students must converge for between-class study and reflection.

Another example of the scale factor (which may pertain primarily to the private junior college) is found in the criteria and planning for student housing. Five hundred students can be accommodated in one massive beehive type of building with high relative efficiency, but this is at the price of a loss in human qualities and residential feeling, and sacrifice of identity of the individual. Conversely, residential units modulated into houses for twenty-five to thirty students each, with individual entrance halls, living rooms, and residential type bathrooms (which by the way cost no more than group showers and toilet rooms located down a common corridor), would surely recognize the predominant importance of human values over that of solely achieving maintenance economy and efficiency for the janitorial staff. Externally, the single beehive appears to be institutional, impersonal, and cold, whereas the modulated residential-scale units intrinsically manifest human warmth and individual importance.

Factor 2—Order

The second factor—order, or campus organization—is closely related to the first factor of scale. A campus, be it large or small, through sensitive ordering of external and internal volumes, together with land forms, can be made rich in its spatial composition. Going from one class or activity to another can be a sensuously pleasurable experience. A well-designed junior college campus can arouse innumerable shades of surfaces, and voids. Such experiences can be compared to the moods engendered

by music in its most intricate symphonic forms. Examples demonstrating this quality in campus design exist today and need only to be experienced by those who doubt the validity of this contention. All too often, however, buildings are organized to achieve equivalent functional efficiency but in ways which unfortunately result in a trite and sterile composition with no more interest or warmth than that of an army cantonment with its standardized buildings in military rows. Interestingly enough, one approach will not cost a penny more than the other. A sensitivity to architectural order is the only difference.

Factor 3—Materials

The third factor of design as it relates to expression and function is in the use of materials. The tactile quality, visual texture, inherent color or colors, scale and form of units, mass and density characteristics and associative heritage of each of the multitude of materials in today's vocabulary, singly and in all their combinations, have probably the most profound and deeply felt impact of any factor, on those who experience a building. All have experienced the contrast between a facility predominantly employing glazed tile walls, industrial type fluorescent lighting fixtures, baked enamel or plastic paneling, and bright tile floors, with another building composed of more textured, natural materials and a variety of floor coverings including carpet.

Construction materials, the vocabulary of architecture with which we define and close our spaces, have perhaps the greatest impact in their contribution to the emotional quality of buildings. Unfortunately there is a great trend today toward the use of synthetic and artificial materials for building finishes based solely on their practical economy and ease of maintenance. There is a disregard for the fact that the spaces created are for the use of persons with human responses and emotions. Furthermore, while the sterile, clinical-type surfaces respond properly to tests conducted with scientific instruments and give a good account of themselves in laboratory reports, impressive current improvements in evocative materials, both new and old, are making them competitive in both initial and life-of-the-project costs. Unfortunately, such materials as carpeting often have to be justified by massive scientific analysis before governing boards and administrators have the courage to use them.

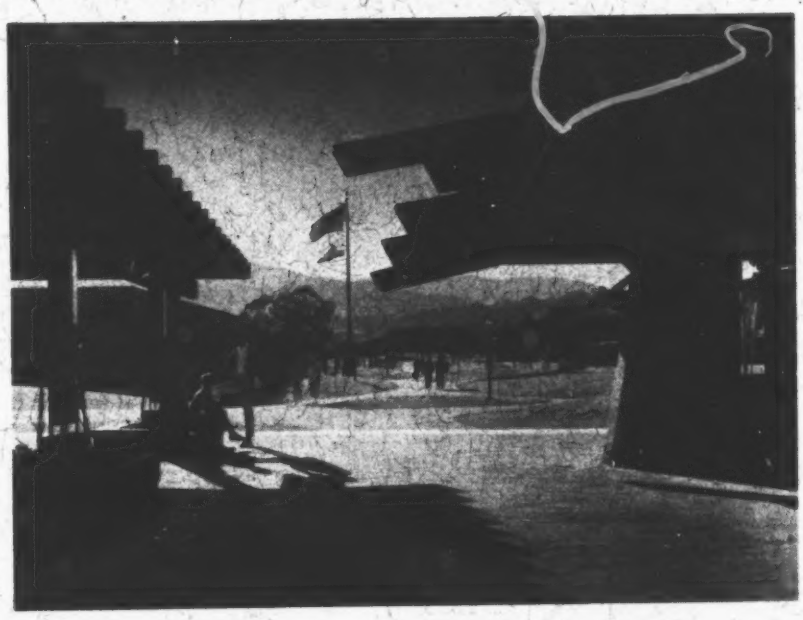
Exterior building materials speak their message as clearly as interior materials. The uninterrupted cube of concrete or steel and glass has a different meaning than the exterior design which provides a variety of texture, line, and arrangement of volumes.

By thorough knowledge of performance and economic characteristics of the materials available, by steadfast sensitivity to emotional qualities sought in the design, over against those engendered by the materials considered, and by bold evaluation of these factors in the design of the materials palette for a project, the architect can today achieve the desired expression together with sound economy and successful function of the various elements of surface.

Factor 4—Style

The fourth factor—architectural style—is perhaps the most misunderstood and controversial aspect of architecture today. Style is much more than an eclectic, superficial exterior treatment, advocated at random by the most influential members of the client's board or staff, though this continues to be a

A striking contrast in styles—Foothill College (left) in California and Pine Manor Junior College in Massachusetts.



common method of determination of style except in the rare case in which the architect is the strongest personality, or in which he has been selected because he is skilled in the evocation of a particular desired style.

Different regions throughout the country each have a definite quality or personality that is readily sensed. New England has a character which is different from that of the Midwest or California or the Southwest, and these differences involve not only climate and topography but traditions and forms that through the years have become characteristic of the region.

Appropriateness of style rests on whether or not the feeling or atmosphere intrinsic to the project and its milieu has successfully been captured. Campus style should be sympathetic with the character of its area and region, reflecting its roots, traditions, climate, and topography. In architectural parlance, this is sometimes called regionalism.

While a form of architecture may fit sympathetically into one area, it may be completely out of harmony with the character of another region. As an extreme example; a Spanish colonial adobe hacienda with tile roof would be rather ridiculous in Tokyo, Japan. It is also inappropriate to impose the same standard form or style of building design in New England, Arizona, and Alaska. Yet, this is being done every day in what is currently called "contemporary" or "international style" architecture. It is equally unfortunate to impose a college whose buildings resemble facilities for light industry on a predominately residential neighborhood; yet this, too, is being done every day.

It can be stated categorically that a college campus can be completely functional, flexible, and incorporate every modern technical advance in construction and engineering, while at the same time it can be of a style and expression that is in complete harmony with its neighborhood. This does not mean an eclectic copy of traditional architectural cliches, but a creative interpretation that results in a harmony of feeling.

It is wholly feasible to use these same principles of design in the portion of a community college campus which is dedicated to vocational-technical education, incorporating such learning areas as automobile mechanics, machine tool operation and design, welding, and the like.

There is no need for the sawtooth factory building on a campus, even one which is strongly oriented to vocational and technical education. Industry itself has moved to more aesthetic forms of architecture for spaces which incorporate similar facilities. If the designer will apply the foregoing principles to these spaces, he can provide a learning environment wholly suited to all instructional needs and yet architecturally consistent with the rest of the campus and its regional context.

Also, this philosophy offers the particular advantage of making vocational students feel they have the same status as students in other programs. This response can be enhanced further by the interlacing of vocational-technical facilities with academic spaces so that students of occupational and academic programs and their faculty members interact together to enrich the experience of both groups.

Design Consultants

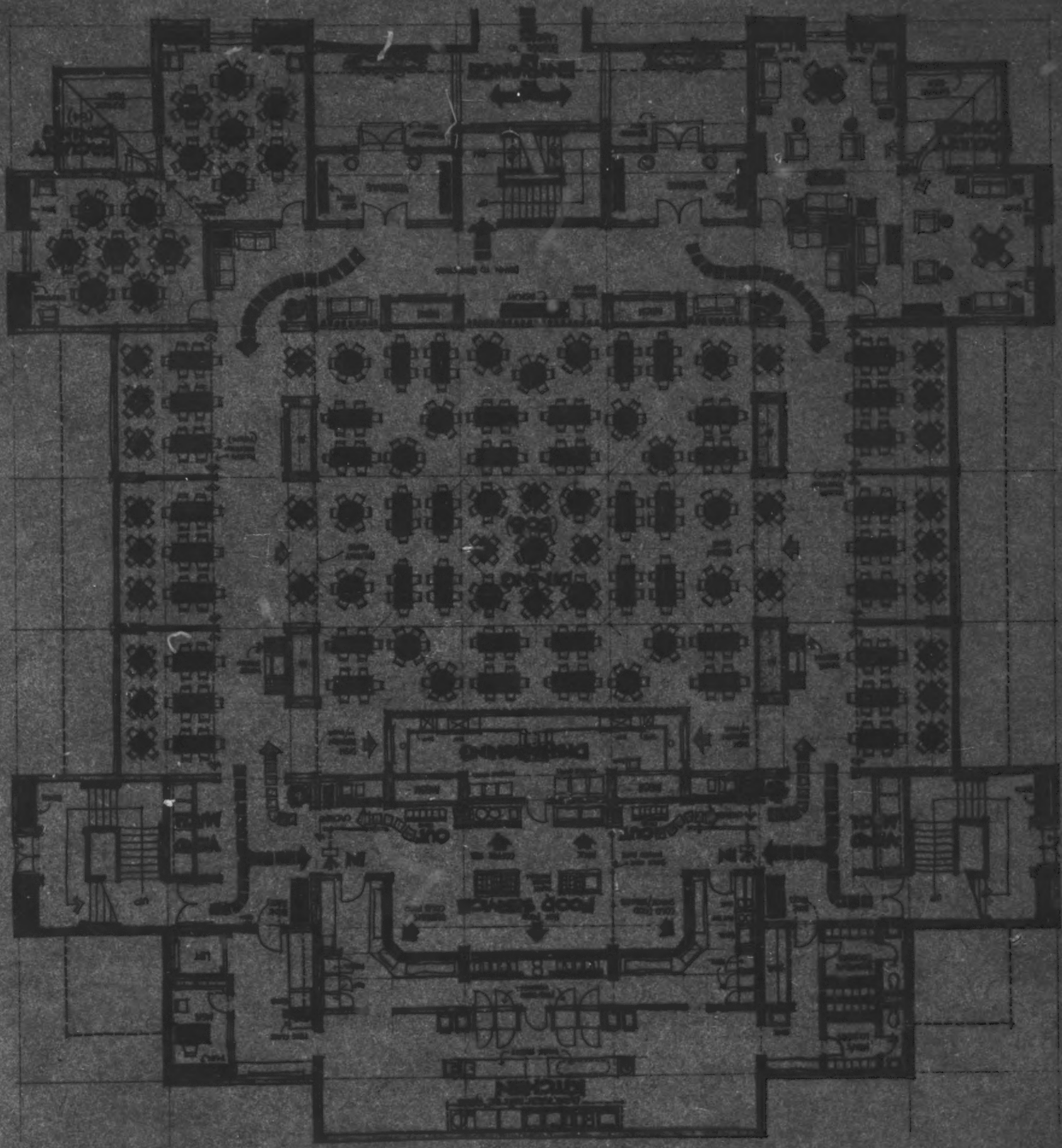
In closing, a word about the use of consultants in areas of specialization in campus design:

Effective land use, site development, and landscaping contribute very significantly to the success of a college master plan. This aspect of campus design is so important that specialists in landscape architecture should be available within the architect's firm or by means of consultants who have particular qualification in this field. These talents should be brought into the work early enough to enable them to offer optimum contributions to creative long-range development planning and the location of individual buildings and exterior facilities.

The selection and degree of involvement of other consultants will vary with the talents of the architectural team and the requirements of the campus. As in other professions, there is a trend toward specialization in facilities planning which takes advantage of concentration by qualified professionals on the intricacies of the most up-to-date, detailed technology and experience in particular fields. Included here are such areas as food service, acoustical design of auditorium for music, dramatic, and other types of performances, and physical education facilities. If such specialized services are effectively deployed and coordinated by the architect, their costs are well repaid by the achievement of designs of greater economic and functional efficiency.

Lastly, a note on the respective roles of educator, board member, and architect in the design phase of campus development.

Effective dialogue is a key to successful design. It is necessary for the educational staff, the governing board, and the architect to be in continuous, thorough, frank, sympathetic communication in order for the architectural solution to carry out the real purpose of the educational program and of the institution. Only with this kind of interplay of ideas can designs be approached and refined and client and architect together bring the project to that eminence of educational excellence and aesthetic élan which will respond to the best aspirations of students, faculty, and community alike.



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